Asbestos Abatement Plan

Brownfield Hazardous Substance Cleanup
EPA Cooperative Agreement #00D47716-0

Doodle Trailhead Project
124 Railroad Street
Pickens, South Carolina
May 1, 2017
Terracon Project No. 86177020

Prepared for:
City of Pickens
Pickens, South Carolina

Prepared by:
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Greenville, South Carolina

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SECTION 01013 - SUMMARY OF THE WORK

PART 1 - GENERAL

RELATED DOCUMENTS

General provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification sections, apply to Work of this section.

PROJECT DIRECTORY

Owner:	City of Pickens 219 Pendleton Street Pickens, South Carolina 29671 Representative: Bruce Evilsizor
Environmental Consultant:	Terracon Consultants, Inc. 72 Pointe Circle Greenville, South Carolina 29615 Representative: Tice Welborn
Asbestos Designer:	Terracon Consultants, Inc. 72 Pointe Circle Greenville, South Carolina 29615 Representative: Jeffrey Gurrie
EPA Region 4 Brownfields Program:	US Environmental Protection Agency (USEPA) Region 4 Atlanta Federal Building 61 Forsyth Street SW, Atlanta, GA 30303 Representative: Barbara Alfano
SCDHEC Brownfields Program:	SC Department of Health and Environmental Control Bureau of Land & Waste Management 2600 Bull Street, Columbia, SC 29201 Representative: Alex Fulmer

PROJECT/WORK IDENTIFICATION

The project name is City of Pickens Hazardous Substance Cleanup: Former Rail Depot located at 124 Railroad Street in Pickens, South Carolina. The project involves the removal of asbestos-containing materials (ACM) to support future demolition. A copy of the asbestos inspection report prepared by Terracon Consultants, Inc. (Terracon) is provided in the Appendix and is incorporated by reference.

SUMMARY OF WORK

This Work involves abatement of various materials in areas within the defined Work area identified on Figures 1 & 2 and summarized below.

In general the Work will consist of the following:

I. Thermal System Insulation

A. Apparent asbestos-containing Thermal System Insulation (TSI) on various piping in the crawlspace may exist. Access to the crawlspaces is very limited. Insulation on piping may be removed using glovebags or wrap and cut methods. Once abatement of other materials in the office area is complete the Contractor shall cut access holes in the floor to verify if suspect TSI exists. The Engineer should field verify all findings. Engineer may require additional floor cuts for verification. See Section 2081 for additional work practices.

II. Surfacing Materials

A. Drywall joint compound. Remove and dispose of asbestos-containing joint compound and associated drywall in the office and break room area. Ceilings may contain double layer of drywall. Additionally drywall may be behind wood paneling. See Section 2081 for additional work practices.

III. Miscellaneous Materials

A. Silver paint and tar on metal roof. Remove and dispose of asbestos-containing paint and tar on the metal roof panels. Removal shall be as a component. See Section 2081 for additional work practices.

B. Roof flashing. Remove and dispose of asbestos-containing roof flashing on the office section and at exterior compressed gas storage area. This material may be removed as an exterior non-friable removal. See Section 2081 for additional work practices.

C. Felt/mastic on exterior wall. Remove and dispose of asbestos-containing felt/mastic on the exterior wall. This material may be removed as an exterior friable removal. See Section 2081 for additional work practices.

D. Various flooring. Remove and dispose of asbestos-containing flooring in the office and break area. Carpeting over tile and multiple-layers may exist. This material should be removed as a regulated removal within a full containment along with the joint compound. See Section 02081 for additional work practices.

E. Black sink coating. Remove and dispose of asbestos-containing sink coating in the break room. Removal shall be as a component. See Section 2081 for additional work practices.

F. Window glazing compound. All older metal framed windows have asbestos-containing glazing compound. Additionally the damaged glazing compound may have fallen into the CMU block. The entire window assembly may be removed and the CMU core shall be vacuumed to clean the debris. See Section 02081 for additional work practices.

G. Brown/black caulk. Newer metal windows have an asbestos-containing caulking. This material may be removed as an exterior non-friable removal. See Section 02081 for additional work practices.

H. Mastic at roof drain assemblies. Mastic on roof drain assemblies were assumed to contain asbestos. Remove roof assemblies as a component and dispose. See Section 02081 for additional work practices.

IV. Materials Containing Less Than One Percent Asbestos.

A. Flooring mastics identified in the building contains asbestos in concentrations less than one percent. This material is not regulated by SCHEC for removal or disposal; however, OSHA regulates occupational exposure to asbestos during the disturbance of these materials. The abatement Contractor shall remove this material.

B. In accordance with SCDHEC materials containing less than 1% asbestos may be disposed of as construction waste; however, for this project the waste will be disposed of as asbestos waste.

The Work includes removal and disposal of ACM designated above and on Figures 1 & 2. The Work shall be conducted and techniques utilized as specified in the documents.

Contractor will provide, erect and maintain all barricades, traffic control devices, hand railings, toe boards, safety devices, scaffolds, safety measures and security measures necessary for the protection of the Contractor's employees, Owner, Designer, and Air Monitoring Firm until the completion of work specified under this Agreement. Safety devices removed during abatement (handrails, flooring, etc.) must be corrected, reinstalled, or demarcated to prevent safety issues.

Negative pressure and a full containment shall be established during all regulated removal activities except glovebag removal methods and exterior removals. Manometer readings are

required during the entire project. Readings may be a continuous strip or documented in writing by the Contractor at each location at least four times per 8-hour work shift.

Asbestos containing material found to extend from the designated areas into, through, above, or below walls, ceilings, roofs or other barriers is also included in this specification. The Contractor is responsible for verifying quantities and locations of asbestos containing materials at this facility for the Owners scope of work. The Contractor will refer to Section 02081 and Figure 1 for specified procedures pertaining to Work Area designations and removal methods.

General and Administrative: Requirements are set forth in the following specification sections:

01013 Summary of the Work - Asbestos Abatement
01043 Project Coordination - Asbestos Abatement
01091 Definitions, Codes, Regulations and Standards – Asbestos Abatement

Abatement Work: Requirements are set forth in the following specification sections, listed here according to the sequence of the Work:

01091 Definitions, Codes, Regulations and Standards - Asbestos Abatement
01410 Air Monitoring
01503 Temporary Facilities - Asbestos Abatement
01513 Exhaust Ventilation System
01560 Worker Protection – Asbestos Abatement
01562 Respiratory Protection
01563 Decontamination Units

Asbestos Removal Work: Procedures are described in the following specification sections:

02081 Removal of Asbestos Containing Materials
02084 Disposal of Asbestos Containing Materials
09805 Encapsulation (lockdown)

POTENTIAL HAZARDS

The disturbance or dislocation of asbestos materials may cause asbestos fibers to be released into the building's atmosphere, thereby creating a potential health hazard to workers and building occupants.

Apprise all workers, supervisory personnel, subcontractors and consultants who will be at the job site of the seriousness of the hazard and of proper work procedures which must be followed.

Where in the performance of the Work, workers, supervisory personnel, subcontractors, or consultants may encounter, disturb, or otherwise function in the immediate vicinity of any identified asbestos-containing materials, take appropriate continuous measures as necessary to protect the general public from the potential hazard of exposure to airborne asbestos. Such

measures will include the procedures and methods described herein, and compliance with regulations of applicable federal, state and local agencies.

ASBESTOS-CONTAINING MATERIALS

The known asbestos-containing materials to be removed are identified in the asbestos inspection report and on the drawings. The Contractor is responsible for verifying all existing conditions and quantities at this facility pertaining to the scope of work established by the Owner.

OWNER OCCUPANCY

Partial Owner Occupancy: The Owner reserves the right to place and install equipment as necessary in or adjacent areas of the building in which asbestos abatement and project decontamination procedures have been completed, and to occupy such completed areas prior to substantial completion, provided that such occupancy does not interfere with completion of the Work. Such placing of equipment and partial occupancy shall not constitute acceptance of the Work or any part of the Work.

PROTECTION OF EXISTING ITEMS

Contractor shall be responsible for maintaining furnishings, driveways, and equipment not specified for removal and disposal. Damage to furnishings or equipment during construction activities shall be restored to existing condition or better at the expense of the Contractor. The Owner will provide the Contractor a written list of salvaged items (if any) and a storage location for items to be moved and turned over. The Contractor is responsible for removing these items without damage and transporting to the designated storage location onsite.

AIR MONITORING

The Owner will contract an Air Monitoring Firm to conduct air monitoring prior to, during, and after abatement of materials by the Contractor. The Contractor is responsible for OSHA compliance monitoring. The Owner's air monitoring firm WILL NOT analyze samples for Contractor's OSHA compliance.

Samples must be analyzed by an American Industrial Hygiene Association (AIHA) accredited laboratory, or when fiber counting is performed onsite, the analyst must be proficient in AIHA's Asbestos Analysts Registry (AAR) program.

PART 2 - PRODUCTS (Not applicable)

PART 3 - EXECUTION (Not applicable)

END OF SECTION

SECTION 01043 - PROJECT COORDINATION – ASBESTOS ABATEMENT

PART 1 - GENERAL

RELATED DOCUMENTS:

General provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification sections, apply to Work of this section.

DESCRIPTION OF WORK:

Minimum administrative and supervisory requirements necessary for coordination of Work on the project include but are not necessarily limited to the following:

Administrative and supervisory personnel
Special reports

ADMINISTRATIVE AND SUPERVISORY PERSONNEL:

General Superintendent: Maintain a full-time General Superintendent who is experienced in administration and supervision of asbestos abatement projects including work practices, protective measures for building and personnel, disposal procedures, etc. This person is the Competent Person as required by OSHA in 29 CFR 1926 for the Contractor and is the Contractor's representative responsible for compliance with all applicable federal, state and local regulations, particularly those relating to asbestos containing materials. This person should have completed a course at an EPA Training Center or equivalent certificate course in asbestos abatement procedures, have had a minimum of five years on-the-job training and meet any additional requirements set forth in 29 CFR 1926 for a Competent Person. The General Superintendent must have had responsible charge of a minimum of three (3) asbestos abatement projects similar in size and type to the work of this contract.

Head Foreman: Maintain one Head Foreman experienced in supervision of asbestos abatement projects including work practices, protective measures for building and personnel, disposal procedures, etc. This person shall have not less than five years of full-time experience in responsible charge of asbestos removal operations similar in scope and magnitude to this project. Head Foreman must remain onsite at all times the Work is in progress.

Crew Leader: For every ten asbestos removal workers (laborers) utilized on this project, provide one experienced AHERA accredited Supervisor having three years minimum experience in successful asbestos removal operations similar in scope and magnitude to this Project. A minimum of one crew leader is required to remain inside EACH work area at all times the Work is in progress.

COORDINATION:

Coordinate construction operations and scheduling with partial occupancy requirements of the Owner and the Owner's use of utilities.

Coordinate construction operations included in various Sections of these Specifications to assure efficient and orderly completion of each part of the Work. Coordinate construction operations included under different Sections that depend on each other for proper installation, connection, and operation.

An initial progress meeting, recognized as "Pre-Construction Meeting" will be convened by the Owners representative prior to start of any work. The preconstruction meeting will be scheduled before start of construction, at a time convenient to the Owner and the Owners Representative, but no later than 15 days after execution of the Agreement. Meet at the project site, or as otherwise directed, with General Superintendent, Owner, Designer, Project Administrator, and other entities concerned with the asbestos abatement work.

SPECIAL REPORTS:

General: Except as otherwise indicated, submit special reports directly to Owner within one day of occurrence requiring special report, with copy to Designer and others affected by occurrence.

Reporting Unusual Events and Inspections by Regulatory Officials: When an event of unusual and significant nature occurs or inspection by an outside party, etc. prepare and submit a special report listing chain of events, persons participating, response by Contractors' personnel, evaluation of results or effects, and similar pertinent information. When such events are predictable, advise Owner at earliest possible date.

Reporting Accidents: Prepare and submit reports of accidents, at site and anywhere else Work is in progress. Record and document data and action; comply with industry standards. For this purpose, an accident is defined to include events where personal injury is sustained, or property loss of substance is sustained, or where the event poses a significant threat of loss or personal injury.

Pre-Construction Inspection: Inspect areas in which work will be performed, prior to commencement of work. Prepare a listing of damage to structure, surfaces, equipment or of surrounding properties which could be misconstrued as damage resulting from the work. Photograph or videotape existing conditions (with permission from the Owner) as necessary to document conditions. Submit to Owner/Designer for record purposes prior to starting work.

Contingency Plan: Prepare a contingency plan for emergencies including fire, accident, power failure, negative air system failure, supplied air system failure, or any other event that may require modification or abridgement of decontamination or Work Area isolation procedures. Include in plan specific procedures for decontamination or Work Area isolation. Note that

nothing in this specification should impede safe exiting or providing of adequate medical attention in the event of an emergency.

Project Directory: Develop a directory of all entities involved in the project. Post copies of the Project Directory in the temporary field office. Include the Contractor's principal staff assignments, including the Superintendent and other personnel in attendance at the site. Identify individuals, their duties and responsibilities. List business name, contact person, normal business and emergency telephone, mobile phone numbers and addresses of:

1. Owner, Designer, and Project Administrator
2. Contractor's General Superintendent, supervisory personnel and Contractor's home office
3. Emergency services including but not limited to fire, ambulance, doctor, hospital, police, power company, telephone company.
4. Local, state, and federal agencies with jurisdiction over the project.

Schedule: Prepare a fully developed, horizontal bar-chart-type, contractor's construction schedule. Submit within 10 days after the date established for "Commencement of the Work."

Progress Meetings: In addition to specific coordination and pre-installation meetings for each element of work, and other regular project meetings held for other purposes, the Contractor shall hold general progress meetings as required. Meetings shall be every two weeks at a minimum. Representatives of the Owner will attend this meetings. In addition to representatives of the Contractor, each subcontractor, supplier, or other entity concerned with current progress or involved in planning, coordination, or performance of future activities shall be represented at these meetings. All participants at the conference shall be familiar with the Project and authorized to conclude matters relating to the work. The Contractor shall prepare meeting minutes and distribute to the attendees within 48 hours of the meeting.

SUBMITTALS:

Refer to Section 01300 for specific details on these required submittals.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

END OF SECTION

SECTION 01091 - DEFINITIONS, CODES, REGULATIONS AND STANDARDS-ASBESTOS ABATEMENT

PART 1 - GENERAL

RELATED DOCUMENTS:

General provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification sections, apply to Work of this section.

DEFINITIONS:

Adequately Wet: To sufficiently mix or penetrate with liquid to prevent the potential release of particulates.

Aerosol: A system consisting of particles, solids or liquids, suspended in air.

Airlock: System for permitting ingress and egress without permitting air movement between a contaminated area and an uncontaminated area, typically consisting of two curtained doorways protected by two overlapping polyethylene sheets and separated by a sufficient distance such that one passes through one doorway into the chamber, allowing the doorway sheeting to overlap and close off the opening before proceeding through the second doorway. The airlock maintains a pressure differential between the contaminated and uncontaminated areas thereby further minimizing flow-through contamination.

Air Monitoring: The process of measuring the fiber content of a specific volume of air.

Amended Water: Water to which a surfactant has been added.

Asbestos: The asbestiform varieties of serpentinite (chrysotile), riebeckite (crocidolite), cummingtonite-grunerite (amosite), anthopyllite, and actinolite-tremolite. For purposes of determining respiratory and worker protection both the asbestiform and non-asbestiform varieties of the above minerals and any of these materials that have been chemically treated and/or altered shall be considered as asbestos.

Asbestos-Containing Material (ACM): Any material containing more than 1 percent by weight of asbestos of any type or mixture of types.

Asbestos-Containing Waste Material: Any material which is or is suspected of being or any material contaminated with an asbestos-containing material which is to be removed from a Work Area for disposal.

Authorized Visitor: The Owner, the Designer, or a representative of any federal, state and local regulatory or other agency having authority over the project.

Barrier: Any surface that seals off the Work Area to inhibit the movement of fibers.

Breathing Zone: A hemisphere forward of the shoulders with a radius of approximately 6 inches to 9 inches.

Category I nonfriable asbestos-containing material (ACM): Nonfriable asbestos or nonfriable asbestos-containing packings, gaskets, resilient floor coverings, and asphalt roofing products containing more than 1% asbestos.

Category II nonfriable ACM: Any material other than packings, gaskets, resilient floor coverings, and asphalt roofing products containing more than 1% asbestos that cannot, when dry be crumbled, pulverized, or reduced to powder by the force expected to act upon it in the course of demolition or renovation operations.

Certified Industrial Hygienist (C.I.H.): An industrial hygienist certified in Comprehensive Practice by the American Board of Industrial Hygiene.

Clean Room: An uncontaminated area or room which is part of the worker decontamination enclosure system, with provisions for storage of workers' street clothes and protective equipment. Also known as the "Change Room."

Clearance monitoring: Area air sampling performed using aggressive clearance sampling techniques to determine the airborne concentrations of residual fibers upon conclusion of asbestos abatement.

Curtained Doorway: A device to allow ingress and egress from one room to another while minimizing air movement between the rooms. Typically constructed by placing two overlapping sheets of plastic over an existing or temporarily framed doorway and securing each along the top of the doorway, with the vertical edge of one along one vertical side of the doorway, and the vertical edge of the other along the opposite vertical side. Two curtained doorways spaced a minimum of three feet apart for an airlock.

Decontamination Enclosure System: A series of connected rooms, with curtained doorways between any two adjacent rooms, for the decontamination of workers or of materials and equipment. A decontamination enclosure system always contains an airlock.

Demolition: The wrecking or taking out of any building component, system, finish or assembly of a facility together with any related handling operation.

Disposal Bag: Six mil thick leak-tight plastic bags used for transporting asbestos waste from Work Area to disposal site.

Each is labeled as follows:

DANGER
CONTAINS ASBESTOS FIBERS
MAY CAUSE CANCER
CAUSES DAMAGE TO LUNGS
DO NOT BREATHE DUST
AVOID CREATING DUST

and

R.Q. – ASBESTOS
9 – NA2212 – PG III

and

Name of Waste Generator:
(Name of Contractor and Owner)

Location of Waste Generated:

Encapsulation: A form of abatement involving the treatment of regulated asbestos-containing material (RACM) with a liquid which covers the surface with a protective coating (bridging) or embeds fibers in an adhesive matrix (penetrating) to prevent the release of asbestos fibers.

Enclosure: The construction of an airtight, impermeable, permanent barrier around asbestos-containing material to control the release of asbestos fibers into the air.

Equipment Decontamination Enclosure System: A decontamination enclosure system for materials and equipment, typically consisting of a designated area of the Work Area, a washroom, and an uncontaminated area.

Equipment Room: A contaminated area or room which is part of the worker decontamination enclosure system, with provisions for storage of contaminated clothing and equipment.

Filter: A media component used in respirators to remove solid or liquid particles from the inspired air.

Friable Asbestos-containing Material: Any material that when dry can be or has been crumbled, pulverized, or reduced to powder, and contains more than 1 percent asbestos.

Glovebag: A single use sack (typically constructed of 6 mil transparent polyethylene or polyvinylchloride plastic) with two inward projecting long sleeve gloves, which are designed to enclose an object from which an asbestos-containing material is to be removed.

Grind: To reduce to powder or small fragments. Grinding includes mechanical chipping or drilling.

HEPA Filter: A High Efficiency Particulate Absolute (HEPA) filter capable of trapping and retaining 99.97 percent of asbestos fibers greater than 0.3 microns in length.

HEPA Filter Vacuum Collection Equipment (or vacuum cleaner): High Efficiency Particulate Absolute filtered vacuum collection equipment with a filter system capable of collecting and retaining asbestos fibers. Filters should be of 99.97 percent efficiency for retaining fibers of 0.3 microns or larger.

Holding Area: A chamber between the washroom and uncontaminated area in the equipment decontamination enclosure system. The holding area constitutes an airlock.

Local Exhaust Ventilation System: A local exhaust system, utilizing HEPA filtration capable of maintaining a negative pressure inside the Work Area and a constant air flow from adjacent areas into the Work Area and exhausting that air outside the Work Area.

Lockdown: A procedure whereby the surface of the Work Area is coated with latex paint or other suitable sealant, using an airless sprayer, after final visual clearance from the Air Monitoring Firm, Designer or Owner, to fix in place and render non-friable, any traces of asbestos material that may remain.

Negative Pressure: Air pressure lower than surrounding areas, generally caused by exhausting air from a sealed space (Work Area).

Negative Pressure Respirator: A respirator in which the air pressure inside the respiratory-inlet covering is positive during exhalation in relation to the air pressure of the outside atmosphere and negative during inhalation in relation to the air pressure of the outside atmosphere.

Owner/Operator: Any person or contractor who owns, leases, operates, controls, or supervises a facility being demolished or renovated, or any person who operates, controls, or supervises the demolition or renovation operation, or both.

Personal Monitoring: Sampling of the asbestos fiber concentrations within the breathing zone of an employee.

Protection Factor: The ratio of the ambient concentration of an airborne substance to the concentration of the substance inside the respirator at the breathing zone of the wearer. The protection factor is a measure of the degree of protection provided by a respirator to the wearer.
Regulated Asbestos-Containing Material (RACM): (a) Friable asbestos-containing material; (b) Category I nonfriable ACM that has become friable; (c) Category I nonfriable ACM that will be or has been subjected to sanding, grinding, cutting, or abrading; or (d) Category II nonfriable ACM that is likely to become or has become crumbled, pulverized, or reduced to powder by the forces expected to act on the material in the course of demolition or renovation operations.

Removal: The act of removing asbestos-containing or contaminated materials from a structure and depositing in a suitable disposal site.

Respirator: A device designed to protect the wearer from the inhalation of harmful atmospheres.

Shower Room: A room constituting an airlock, between the clean room and the equipment room in the worker decontamination enclosure system, with hot and cold or warm running water suitably arranged for complete showering during decontamination.

Surfactant: A chemical wetting agent added to water to improve penetration, thus reducing the quantity of water required for a given operation or area.

Testing Laboratory: The term "testing laboratory" is defined as an independent entity engaged to perform specific inspections or tests of the work, either at project site or elsewhere; and to report results of those inspections or tests.

Time Weighted Average (TWA): The average concentration of a contaminant in air during a specific time period.

Washroom: A room between the Work Area and the holding area in the equipment decontamination enclosure system. The washroom constitutes an airlock.

Wet Cleaning: The process of eliminating asbestos contamination from building surfaces and objects by using cloths, mops, or other cleaning utensils which have been dampened with amended water or diluted removal encapsulant and afterwards thoroughly decontaminated or disposed of as asbestos-contaminated waste.

Work Area: The area(s) where asbestos-related work or removal operations are performed which is defined and/or isolated to prevent the spread of asbestos dust, fibers or debris, and entry by unauthorized personnel. Work Area is a Regulated Area as defined by 29 CFR 1926.1101.

CODES, REGULATIONS, AND STANDARDS:

General Applicability of Codes, Regulations, and Standards: Except to the extent that more explicit or more stringent requirements are written directly into the contract documents, all

applicable codes, regulations, and standards have the same force and effect and are made a part of the contract documents by reference as if copied directly into the contract documents, or as if published copies are bound herewith.

Contractor Responsibility: The Contractor shall assume full responsibility and liability for the compliance with all applicable federal, state and local regulations pertaining to work practices, hauling, disposal, and protection of workers, visitors to the site, and persons occupying areas adjacent to the site. The Contractor is responsible for providing medical examinations and maintaining medical records of personnel as required by the applicable federal, state, and local regulations. The Contractor shall hold the Owner and Designer harmless for failure to comply with any applicable work, hauling, disposal, safety, health or other regulation on the part of himself, his employees, or his subcontractors.

Federal Requirements: Which govern asbestos abatement work or hauling and disposal of asbestos waste materials include but are not limited to the following:

U.S. Department of Labor, Occupation Safety and Health Administration, (OSHA), including but not limited to:

Occupational Exposure to Asbestos, Tremolite, Anthophyllite, and Actinolite; Final Rules Title 29, Part 1910, Section 1001 and Part 1926, Section 1101 of the Code of Federal Regulations

Respiratory Protection
Title 29, Part 1910, Section 134 of the
Code of Federal Regulations

Construction Industry
Title 29, Part 1926, of the
Code of Federal Regulations
Access of Employee Exposure and Medical Records
Title 29, Part 1910, Section 120 of the
Code of Federal Regulations

Asbestos Hazard Emergency Response Act
40 CFR Part 763 (The Final Rule)

Hazard Communication
Title 29, Part 1910, Section 1200 of the
Code of Federal Regulations
Specifications for Accident Prevention Signs and Tags
Title 29, Part 1910, Section 145 of the
Code of Federal Regulations

U. S. Environmental Protection Agency (EPA) including but not limited to:

Asbestos Abatement Projects Rule
40 CFR Part 762
CPTS 62044, FRL 2843-9
Federal Register, Vol 50 No 134, July 12, 1985
P28530-28540

Regulation for Asbestos
Title 40, Part 61, Sub-part A of the
Code of Federal Regulations

National Emission Standard for Asbestos
Title 40, Part 61, Sub-part M (Revised Sub-part B)
of the Code of Federal Regulations

EPA Guidance Documents: which discuss asbestos abatement work or hauling and disposal of asbestos waste materials are listed below for the contractor's information only. These documents do not describe the Work and are not a part of the Work of this contract. EPA maintains an information number (800) 334-8571; publications can be ordered from (800) 424-9065 in Washington, DC):

Asbestos-Containing Materials in School Buildings - A Guidance Document.
Parts 1 & 2. (Orange Books) EPA C00090 (out of print)

Friable Asbestos-Containing Materials in Schools: Identification and Notification Rule (40 CFR Part 763).

Evaluation of the EPA Asbestos-in-Schools Identification and Notification Rule. EPA 560/5-84-006.

Asbestos in Buildings: National Survey of Asbestos-Containing Friable Materials. EPA 560/5-84-006.

Asbestos in Buildings: Guidance for Service and Maintenance Personnel. EPA 560/5-85-018.

Asbestos Waste Management Guidance. EPA 530-SW-85-007.

Asbestos Fact Book. EPA Office of Public Affairs.

State Requirements: South Carolina Department of Health and Environmental Control (SCDHEC) Regulation 61-86.1 Standards of Performance for Asbestos Projects. Abide by all state rules, regulations, ordinances, etc. which govern the specified asbestos abatement work, licensing or hauling and disposal of asbestos waste material.

Local Requirements: Abide by all local rules, regulations, ordinances, etc. which govern the specified asbestos abatement work, licensing, or hauling and disposal of asbestos waste removal.

Industry Recognized Standards

"Managing Asbestos in Buildings: A Guide for Owners and Managers" – A revision to the USEPA 1985 document " Guidance for Controlling Asbestos-Containing Materials in Buildings" (EPA 560/5-85-024) known as the purple book.

END OF SECTION

SECTION 1300 - SUBMITTALS

PART 1 - GENERAL

RELATED DOCUMENTS

General provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification sections, apply to Work of this section.

DESCRIPTION OF WORK

General: The required submittals are identified in this section and/or elsewhere in the Specification. Make submittals to the Owner in a timely manner and at appropriate times in the execution of the Work to allow for sufficient and prompt review by the Owner. Removal work will not commence until submittals are received by the Owner and/or Designer. Revise and resubmit as necessary.

Submittals as required in the Contract Documents shall be submitted in electronic format (PDF). Submit complete sets to the Owner and/or Designer for his review of "Pre-Job Submittals" on or before the date of the pre-construction meeting. The Work may not proceed until the complete pre-job submittal package has been reviewed and approved by the Owner and/or Designer.

Submit complete sets to the Designer for his review of "Post-Job Submittals" following the final completion of the Work. Request for final payment will not be approved until the post-job submittal package has been reviewed by the Owner and/or Designer.

Identify individual submittals by name and include a table of contents in each submittal package.

Pre-Job Submittals.

1. Permits: Permits required for the removal, encapsulation, handling of asbestos containing materials, and general contracting will be obtained by the Contractor.

   The Contractor shall obtain all permits required by state and/or local regulatory agencies or jurisdictions for the transportation and disposal of asbestos containing waste.

   Post one copy of all permits at the Work site. Keep on file in the Contractor's office one copy of each and provide a current copy of each to the Owner.

2. Submit complete information relative to the following:

   Submit a copy of the completed Asbestos Removal Notice Form.

   Submit South Carolina Licenses for all workers and supervisors participating on the project.

   Submit names of Supervisory personnel including superintendent, head foreman, crew leader(s), and workers and their qualifications and training including:

   Individually signed Respiratory Training Form or equivalent for each worker to be utilized on the project.

   Individually signed Certificates of Worker Training or equivalent for each worker to be utilized on the project.

   Contractor's affidavit that all Contractor's employees on this project have successfully completed medical surveillance as required by 29 CFR 1926 and the statement by a medical doctor.

   Hazardous Waste Management Plan.

3. For each Work Area, submit a plan of action: Submit a detailed plan of the procedures proposed for use in complying with the requirements of this specification. Include in the abatement plan, a contingency emergency plan, the location and layout of the de-contamination areas, the sequencing of asbestos work, methods to be used to assure the safety of site visitors, disposal plan, including location of approved disposal site, and a detailed description of the methods to be used to control pollution and ensure site security. Expand upon the use of portable HEPA ventilation systems, closing out of the building's HVAC system, method of removal to prevent visible emissions from the Work Area, and packaging of removed asbestos debris. Include sequencing and schedule for installation of architectural finishes/materials. The plan must be approved by the Designer prior to commencement of Work.

Submittals During the Work and Post Job Submittals: All submittals must be turned over to the Owner and/or Designer as outlined below.

1. Revise and submit progress schedule as needed.
2. Submit training certificates for all new or additional employees before their assignment to the project.

3. A copy of daily security, worker, and visitor log signed by the superintendent on a weekly basis.

4. Static pressure differential records on a weekly basis.

5. Submit a copy of employee air monitoring results relative to OSHA respiratory protection level compliance on a weekly basis.

6. Transport manifests and landfill receipts as they are received.

7. Post-job submittals must be turned over to the Owner and/or Designer no later than ten working days after completion of Work and prior to the final request for payment.

Submittals for Air Monitoring Firm:

1. Submit required information outlined in Section 01410 to the Designer.
2. Prior to mobilization submit the following to the Owner and/or Designer: SCDHEC license, AIHA AAR letter of proficiency, firms QA program, and equipment calibration certificates.

3. On a weekly basis submit air sample analysis, QA data (reference counts, recounts, and microscope calibration checks) and daily field notes to the Owner and/or Designer.

4. At the conclusion of the project submit a summary report of the air monitoring activities to the Owner and/or Designer no later than 30 working days after completion of Work and prior to the final request for payment.

PART 2 - PRODUCTS

MANUFACTURER'S LITERATURE:

Where contents of submitted literature from manufacturers includes data not pertinent to the submittal, clearly show which portions of the contents is being submitted for review.

Submit an electronic copy to Owner and/or Designer for their review and file.

PART 3 - EXECUTION

QUALITY ASSURANCE:

Coordination of Submittals

Carefully review all aspects of each item being submitted.

Verify that each item and its appropriate submittals conform in all respects with the specified requirements.

Certify, by affixing signature of Contractor's authorized representative to the corner of each submittal package, that this coordination has taken place.

IDENTIFICATION OF SUBMITTALS:

Number consecutively and clearly identify all submittals. Show identification information on at least the first page of each submittal and elsewhere as necessary for positive identification of submittal.

Accompany each submittal package with a letter of transmittal showing all information required for identification and checking.

GROUPING OF SUBMITTALS:

Group submittals into packages identified as "Pre-Job Submittals" and "Post-Job Submittals".

Partial submittals may be rejected for noncompliance with the Contract Documents.

TIMING OF SUBMITTALS:

Make submittals far enough in advance of scheduled dates for commencement, execution or installation to provide time required for review, for securing necessary approvals, for possible revisions and resubmittals and for placing orders and securing delivery.

The Owner and/or Designer will use his best efforts to review submittals within three days of receipt of submittals.

Contractor will be held responsible for delays occasioned by in-complete submittals packages.

OWNER/DESIGNER'S REVIEW:

Review by the Owner and/or Designer does not relieve the Contractor from responsibility for errors which may exist in the submitted data. The Contractor will be solely responsible for the means, methods, techniques, sequences, and procedures involved in the execution of the Work.

Make revisions as required by the Owner and/or Designer and resubmit for approval.

END OF SECTION

SECTION 01410 - AIR MONITORING

PART 1 - GENERAL

RELATED DOCUMENTS:

General provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification sections, apply to Work of this section.

DESCRIPTION OF THE WORK:

For this project, the Owner will select an Air Monitoring Firm (Terracon). This section describes air monitoring carried out by the Air Monitoring Firm to verify that the outside environment remain uncontaminated. This section also sets forth airborne fiber levels outside the Work Area as action levels, and describes the action required by the Contractor if an action level is met or exceeded.

Air monitoring required by OSHA is the responsibility of the Contractor and is not covered in this section. Owner will not be performing air monitoring to meet these requirements. Owner's third-party air monitor will not analyze air samples collected by Contractor.

AIR MONITORING QUALIFICATIONS:

The following is required of the onsite air monitor for this project:

A. Have a current SCDHEC license for air monitoring.

B. The onsite analyst shall be proficient in AIHA's Asbestos Analysts Registry (AAR) program and submit evidence to the Owner.

C. Submittal of firms Quality Assurance program to meet the requirements of NIOSH Method 7400, Asbestos and Other Fibers by PCM.

D. Submit current calibration certificates for air calibration devices used onsite.

E. Have at least 90 days experience monitoring asbestos abatement projects.

AIR MONITORING:

A. Work Area Isolation: The purpose of the Air Monitoring Firm will be to detect faults in the Work Area isolation such as:

    1. Failure of filtration or rupture in the local exhaust system,

    2. Contamination of the exterior of the building with airborne asbestos fibers.

B. Should any of the above occur, the Contractor shall immediately cease asbestos abatement activities until the fault is corrected. Work shall not recommence until authorized by the Designer.

C. Work Area Airborne Fiber Count: The Air Monitoring Firm will monitor airborne fiber counts in the Work Area. The purpose of this air monitoring will be to detect airborne fiber counts which may significantly challenge the ability of the Work Area isolation procedures to protect the outside of the building from contamination by airborne fibers.

D. Work Area Clearance: To determine if the elevated airborne fiber counts encountered during abatement operations have been reduced to an acceptable level, the Air Monitoring Firm will sample and analyze air as specified in Sections 02081.

E. The Air Monitoring Firm will be conducting air monitoring during the course of the project. Samples shall be analyzed onsite.

ANALYTICAL METHODS:

All area and personal air samples will be analyzed by phase contrast microscopy (PCM) using NIOSH, 7400 Method. Clearance samples for work areas applicable to SCDHEC R. 61-86.1 shall be analyzed by Transmission Electron Microscopy in accordance with 40 CFR 763.

SCHEDULING:

A. Testing by the Air Monitoring Firm shall be performed in areas and at times during the Work as deemed necessary by the Designer or as specified in the Contract Documents.

B. Unless otherwise approved by the Designer, Contractor shall schedule final testing at least twenty-four hours prior to desired time of testing.

C. Unless otherwise approved by the Designer, Contractor shall notify the Designer 72 hours prior to variations in the originally scheduled work hours, in order to receive approval from the Designer and Owner to arrange proper testing services.

D. Coordinate other scheduling with Designer as necessary.

RESULTS:

A. All testing and analysis will be performed promptly and results issued expeditiously in order to minimize any possible delay in the progress of the Work.

B. Test results will be available to Owner and Contractor as follows:

1. Air sample results by Phase Contrast Microscopy: 24 hours from sample extraction time.

2. Air sample clearance results by Transmission Electron Microscopy: 48 hours from sample receipt at the laboratory.

3. Results of other tests deemed necessary by Designer: as quickly as possible but not later than three days following completion of test(s) and receipt of results.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION

SCHEDULE OF AIR SAMPLES:

General: The number and volume of air samples will be in accordance with the following schedule:

Before Start of Work:

The Air Monitoring Firm will secure the following Air Samples to establish a baseline before start of Work.

Location Sampled	Number of Samples	Analytical Method	Minimum Detection Limit (Fibers/cc)	Minimum Volume (L)	Flow Rate (LPM)
Within each Work Area & adjacent to the work area	5	NIOSH 7400	0.005	1200	3.0-12.0

From start of Work through the project decontamination, the Air Monitoring Firm will conduct representative daily samples inside and outside each work area as described in SCDHEC R. 61-86.1

Location Sampled	Number of Samples	Analytical Method	Detection Limit (Fibers/cc)	Flow Rate (LPM)
Inside &Outside Each Work Area	4-6	NIOSH 7400	0.01	3.0-12.0

If interior airborne fiber counts exceed 0.1 f/cc, additional samples will be taken as necessary to monitor fiber levels.

If any air samples taken outside of the Work Area exceeds the 0.01 f/cc then Contractor will be required to immediately and automatically stop all Work and take remedial action.

The Air Monitoring Firm will conduct Clearance monitoring following abatement inside each work area as described in SCDHEC R. 61-86.1 and in Section 02081.

Location Sampled	Number of Samples	Analytical Method	Criteria Limit	Minimum Volume (L)	Flow Rate (LPM)
Within each Work Area	5	NIOSH 7400 TEM AHERA	0.01 f/cc 70 Str./mm^2	1200	3.0-10.0

PERSONNEL MONITORING:

Contractor shall be responsible for OSHA air monitoring requirements. Contractor's OSHA monitoring shall be analyzed by an independent laboratory. Owner's third-party air monitor will not analyze air samples collected by Contractor.

END OF SECTION

SECTION 01503 - TEMPORARY FACILITIES

PART 1 - GENERAL

RELATED DOCUMENTS:

General provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification sections, apply to Work of this section.

DESCRIPTION OF REQUIREMENTS:

General: Provide temporary connection to existing building utilities or provide temporary facilities as required herein or as necessary to carry out the Work.

PART 2 - PRODUCTS

MATERIALS AND EQUIPMENT:

General: Provide new or used materials and equipment that are undamaged and in serviceable condition. Provide only material and equipment that is recognized as being suitable for the intended use, and is in compliance with appropriate standards.

WATER SERVICE:

A. Temporary Water Service Connection: All connections to the Owner's water system shall include backflow protection.

B. Water Hoses: Employ hoses with a pressure rating greater than the maximum pressure of the water distribution system to provide water into each area and to each Decontamination Unit.

C. Hot Water: Hot water is not available from Owner. Contractor will provide necessary water heating equipment.

D. Relocate, modify and extend services and facilities as required during the course of Work so as to accommodate the entire Work of the project.

ELECTRICAL SERVICE:

A. General: Provide a weatherproof, grounded temporary power service and distribution system of sufficient size, capacity, and power characteristic to accommodate performance of Work during the construction period. An electrical ground fault circuit interrupter shall be utilized between the power source and the site of containment usage. Install temporary lighting adequate to provide sufficient illumination for safe work and traffic conditions in every area of Work. Contractor may use existing electrical service with permission from the Owner. If power is unavailable from Owner, Contractor shall provide power source.

B. Power Distribution System: Provide circuits of adequate size and proper characteristics for each use. In general, run wiring overhead and rise vertically where wiring will be least exposed to damage from construction operations.

SCAFFOLDING:

Provide scaffolding, ladders and/or staging, etc. as necessary to accomplish the work of this contract. Scaffolding may be of suspension type or standing type such as metal tube and coupler, tubular welded frame, pole or outrigger type or cantilever type. The type, erection and use of scaffolding shall comply with applicable OSHA provisions.

FIRE EXTINGUISHERS:

Fire Extinguisher: Locate fire extinguishers where they are most convenient and effective for their intended purpose, but provide not less than one extinguisher in each Work Area. Provide hand-carried, portable, UL-rated, Class ABC, dry-chemical extinguishers or a combination of extinguishers of NFPA-recommended classes for the exposures.

TEMPORARY STRUCTURES:

A. Temporary Toilet Units: Provide self-contained, single-occupant toilet units of the chemical type. Provide units properly vented and fully enclosed with a glass-fiber-reinforced polyester shell or similar nonabsorbent material. Separate handwashing facilities shall also be provided.

PART 3 - EXECUTION

INSTALLATION, GENERAL

A. Use qualified personnel for installation of temporary facilities. Locate facilities where they will serve the Project adequately and result in minimum interference with performance of the Work. Relocate and modify facilities as required. Installation shall be in compliance with manufactures instructions, OSHA, NFPA, and/or NEC.

B. Provide each facility ready for use when needed to avoid delay. Maintain and modify as required. Do not remove until facilities are no longer needed or are replaced by authorized use of permanent facilities.

END OF SECTION

SECTION 01513 - EXHAUST VENTILATION SYSTEM

PART 1 - GENERAL

RELATED DOCUMENTS:

General provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification sections, apply to Work of this section.

PART 2 - PRODUCTS

EXHAUST MACHINES:

Supply the required number of HEPA filtered fan units to the site in accordance with these specifications. Use units that are manufactured and have appropriate UL and efficiency testing. Units that appear to be damaged shall be removed from service immediately. Units shall have a three stage filtration process; first-stage low efficiency for particles 100 µm and larger, second-stage filter for particles down to 5 µm, and the final stage filter (HEPA) capable of removing 99.99% particles at 0.3 µm or larger.

PART 3 - EXECUTION

GENERAL:

A static negative air pressure of at least 0.02 inches water column shall be maintained at all times in the Work Area enclosure to ensure that contaminated air does not enter non-contaminated areas. Contractor is responsible for all patent requirements related to exhaust and shall provide a continuously operating **manometer** with alarm to measure static pressure differential. The negative air pressure shall be monitored by an employee of the Contractor or their delegate to prevent loss of negative pressure. Record the manometer readings four times throughout the 8-hour work shift at a minimum. Submit readings as Specified in Section 1300, Submittals.
.

PREPARATION OF THE WORK AREA:

A. Determining the Ventilation Requirements: Provide fully operational local exhaust systems supplying a minimum of one air change every 15 minutes. Determine the volume in cubic feet of the Work Area by multiplying floor area by ceiling height. Determine total ventilation requirement in cubic feet per minute (cfm) for the Work Area by dividing this volume by the air change rate.

B. Ventilation Required (CFM) = Volume of Work Area (cu. ft.)/15 min. Determine Number of Units needed to achieve 15 minute change rate by dividing the ventilation requirement (CFM) above by capacity of exhaust unit(s) used. Capacity of a unit for purposes of this section is the capacity in cubic feet per minute with fully loaded filters in the machines labeled operating characteristics. Number of Units Needed = Ventilation Requirement (CFM)/ Capacity of Unit with Loaded Filters (CFM).

C. Add one additional unit as a backup in case of equipment failure or machine shutdown for filter changing.

D. Location of Exhaust Units: Locate exhaust unit(s) so that makeup air enters Work Area primarily through decontamination facilities and traverses Work Area as much as possible. This may be accomplished by positioning the exhaust unit(s) at a minimum distance from the worker access opening or other makeup air sources.

E. Place End of Unit or its exhaust duct through an opening in the plastic barrier or wall covering. The plastic around the unit or duct shall then be sealed with tape and caulk as required.

F. Vent Exhaust Units to the exterior away from occupied areas unless otherwise authorized in writing by the Designer.

USE OF THE LOCAL EXHAUST SYSTEM:

A. General: Each unit shall be serviced by a dedicated minimum 115V-20A circuit, or voltage and amperage specified by the manufacturer.

B. Testing the System: Test local exhaust system before any asbestos-containing material is wetted or removed. After the Work Area has been prepared, the decontamination facility set up, and the exhaust unit(s) installed, start the unit(s) one at a time.

C. Demonstrate Operation of the local exhaust system to the Air Monitoring Firm and/or Designer including, but not be limited to, the following:

    a. Plastic barriers and sheeting move lightly in toward Work Area,

b. Curtain of decontamination units move lightly in toward Work Area,

c. There is a noticeable movement of air through the decontamination unit. Use smoke tube to demonstrate air movement from Clean Room to Shower Room, from Shower Room to Equipment Room, and from Equipment Room to Work Area.

d. Use smoke tubes to demonstrate a positive motion of air across all areas in which Work is to be performed.

D. Start exhaust units before beginning Work (before any asbestos-containing material is disturbed). If more than one unit is installed, they should be turned on one at a time, checking the integrity of wall barriers for secure attachment and need for additional support. After abatement work has begun, run units continuously to maintain a constant negative pressure until decontamination of the Work Area is complete. Do not turn off units at the end of the work shift or when abatement operations temporarily stop. Do not shut down local exhaust system during lockdown procedures, unless authorized by the Designer in writing.

E. If an electric power failure occurs, immediately stop all abatement work and do not resume until power is restored and all exhaust units are operating again. At completion of abatement work, allow exhaust units to run as specified under Section 02081, to remove airborne fibers that may have been a generated during abatement work and cleanup and purge the Work Area with clean makeup air. The units may be required to run for a longer time after decontamination, if dry or only partially wetted asbestos material was encountered during any abatement work.

F. Perform shutdown dismantling of the local exhaust system in accordance with procedures outlined in Section 02081- Removal of Asbestos-Containing Materials.

END OF SECTION

SECTION 01560 - WORKER PROTECTION

PART 1 - GENERAL

RELATED DOCUMENT:

General provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification sections, apply to Work of this section.

DESCRIPTION OF WORK:

This section describes the equipment and procedures required for protecting workers against asbestos contamination and other work place hazards except for respiratory.

RELATED WORK SPECIFIED ELSEWHERE:

Respiratory Protection is specified in Section 01562.

WORKER TRAINING:

Train, in accordance with 29 CFR 1926.1101, 40 CFR 763, and SCDHEC R. 61-86.1, all workers in the dangers inherent in handling asbestos and breathing asbestos dust and in proper work procedures and personal and area protective measures. Include but do not limit the topics covered in the course to the following:

Methods of recognizing asbestos.

Health effects associated with asbestos.

Relationship between smoking and asbestos in producing lung cancer.

Nature of operations that could result in exposure to asbestos.

Importance of and instruction in the use of necessary protective controls, practices and procedures to minimize exposure including:

-- Engineering controls
-- Work practices
-- Respirators
-- Housekeeping procedures
-- Hygiene facilities

-- Protective clothing
-- Decontamination procedures
-- Emergency procedures
-- Waste disposal procedures
-- Purpose, proper use, fitting, instructions, and limitations of respirators as required by 29 CFR 1910.134
-- Appropriate work practices for the Work
-- Requirements of medical surveillance program
-- Review of 29 CFR 1926
-- Exhaust ventilation systems
-- Work practices including hands on or on-job training
-- Personal decontamination procedures
-- Air monitoring, personnel and area

MEDICAL SURVEILLANCE:

Provide a medical surveillance program and physician's opinion before a respirator is assigned as required by 29 CFR 1910.134 and 29 CFR 1926.103(e)(10). In addition, require that the physician provide an evaluation of the individual's ability to work in environments capable of producing heat stress in the worker.

PART 2 - EQUIPMENT

PROTECTIVE CLOTHING:

A. Coveralls: Provide disposable full-body coveralls and disposable head covers, and require that they be worn by all workers in the Work Area. Provide a sufficient number for all required changes, for all workers in the Work Area.

B. Hard Hats: Provide head protection (hard hats) as required by OSHA for all workers. Require hard hats to be worn at all times that Work is in progress that may potentially cause head injury. Provide hard hats of type with plastic strap type suspension. Require hats to remain in the Work Area throughout the Work. Thoroughly clean, decontaminate and bag hats before removing them from the Work Area at the end of the Work.

C. Footwear: Provide foot covers and footwear with non-skid soles, and where required by OSHA, foot protection for all workers. Do not allow this footwear to be removed from the Work Area for any reason other than disposal of contaminated waste or transfer to another asbestos Work Area.

D. Goggles: Provide eye protection (goggles) as required by OSHA for all workers involved in scraping, spraying, or any other activity which may potentially cause eye injury. Goggles will not be worn with full face respirators.

E. Gloves: Provide work gloves.

ADDITIONAL PROTECTIVE EQUIPMENT:

Disposable coveralls, head covers, and footwear covers, and PAPR respiratory protection shall be provided by the Contractor for the Owner, Designer, and other authorized representatives who may inspect the job site.

Provide all workers with appropriate tool tethers to prevent injury to workers below.

PART 3 - EXECUTION

GENERAL:

Contractor shall assume sole responsibility and provide worker protection as required by the most stringent OSHA standards applicable to the Work.

Each time the Work Area is entered, all workers shall wear a disposable whole body suit. The worker may wear this suit over their street cloths during non-friable removals.

DECONTAMINATION PROCEDURES:

Require all workers to adhere to the following personal decontamination procedures at a minimum whenever they leave the Work Area:

Regulated removals utilizing a full decontamination unit:

- When exiting area, remove disposable coveralls, disposable head covers, and disposable footwear covers or boots in the equipment room.
- Still wearing respirators, proceed to showers. Showering is mandatory. Thoroughly wet body. Remove respirator and dispose of filter properly. Carefully wash respirator facepiece. Shower completely with soap and water. Rinse shower walls and floor prior to exit.
- Proceed from shower to changing room and change into street clothes or into new disposable work items.

WITHIN WORK AREA:

Workers MAY NOT eat, drink, smoke, apply cosmetics, chew gum or use tobacco products in the Work Area. To eat, chew, apply cosmetics, drink or smoke, workers shall follow the procedure described above, then dress in street clothes before entering the non-Work Areas of the building.

END OF SECTION

SECTION 01562 - RESPIRATORY PROTECTION

PART 1 - GENERAL

RELATED DOCUMENTS:

General provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification sections, apply to Work of this section.

DESCRIPTION OF WORK:

Instruct and train each worker involved in abatement in proper respiratory use and require that each worker always wear a respirator, properly fitted on the face in the Work Area from the start of any operation which may cause airborne asbestos fibers until the Work Area is completely decontaminated. Use respiratory protection appropriate for the fiber level encountered in the work place.

STANDARDS:

Except to the extent that more stringent requirements are written directly into the Contract Documents, the following regulations and standards have the same force and effect (and are made a part of the Contract Documents by reference) as if copied directly into the Contract Documents, or as if published copies were bound herewith. Where there is a conflict in requirements set forth in these regulations and standards, meet the more stringent requirement.

OSHA	-	U.S. Department of Labor Occupational Safety and Health Administration, Safety and Health Standards 29 CFR 1910, Section 1001 and Section 1910.134, 29 CFR 1926.
CGA	-	Compressed Gas Association, Inc., New York, Pamphlet G-7, "Compressed Air for Human Respiration", and Specification G-7.1 "Commodity Specification for Air".
ANSI	-	American National Standard Practices for Respiratory Protection, ANSI Z88.2-1980.
NIOSH	-	National Institute for Occupational Safety and Health.

PART 2 - PRODUCTS

Provide respirators and filters approved by the National Institute for Occupational Safety and Health (NIOSH), Department of Health and Human Services, for use in atmospheres containing asbestos fibers.

PART 3 - EXECUTION

GENERAL:

Respirators: Select respirators approved by the National Institute for Occupational Safety and Health (NIOSH), Department of Health and Human Services, for use in atmospheres containing asbestos fibers. Furnish personnel engaged in the removal and demolition of asbestos materials with supplied air respirators, continuous flow or pressure demand class or PAPR, until the TWA is established or a negative exposure assessment is furnished.

After the TWA is established, the Contractor shall furnish respirators as required. Respirators offer varying degrees of protection, generally determined by the type of respirator. The assigned protection factor (APF) indicates the expected degree of protection provided by the type of respirator. A respirator with a protection factor of 10 will provide protection to a properly fit the wearer in air concentrations up to 10 times the Permissible Exposure Limit (PEL).

Employers must use the assigned protection factors listed in Table 1 to select a respirator that meets or exceeds the required level of employee protection. When using a combination respirator (e.g., airline respirators with an air-purifying filter), employers must ensure that the assigned protection factor is appropriate to the mode of operation in which the respirator is being used.

Table 1. -- Assigned Protection Factors[5]

Type of respirator[1], [2]	Quarter mask	Half mask	Full facepiece	Helmet/ hood	Loose-fitting facepiece
1. Air-Purifying Respirator	5	[3]10	50	.....	.....
2. Powered Air-Purifying Respirator (PAPR)	.....	50	1,000	[4]25/1,000	25
3. Supplied-Air Respirator (SAR) or Airline Respirator					
• Demand mode	.....	10	50	.....	.....
• Continuous flow mode	.....	50	1,000	[4]25/1,000	25
• Pressure-demand or other positive-pressure mode	.....	50	1,000	.....	.....

Notes:
[1]Employers may select respirators assigned for use in higher workplace concentrations of a hazardous substance for use at lower concentrations of that substance, or when required respirator use is independent of concentration.

[2]The assigned protection factors in Table 1 are only effective when the employer implements a continuing, effective respirator program as required by this section (29 CFR 1910.134), including training, fit testing, maintenance, and use requirements.
[3]This APF category includes filtering facepieces, and half masks with elastomeric facepieces.
[4]The employer must have evidence provided by the respirator manufacturer that testing of these respirators demonstrates performance at a level of protection of 1,000 or greater to receive an APF of 1,000. This level of performance can best be demonstrated by performing a WPF or SWPF study or equivalent testing. Absent such testing, all other PAPRs and SARs with helmets/hoods are to be treated as loose-fitting facepiece respirators, and receive an APF of 25.
[5]These APFs do not apply to respirators used solely for escape. For escape respirators used in association with specific substances covered by 29 CFR 1910 subpart Z, employers must refer to the appropriate substance-specific standards in that subpart. Escape respirators for other IDLH atmospheres are specified by 29 CFR 1910.134 (d)(2)(ii).

Air Systems Monitor: Continuously monitor the air system operation (if used) including compressor operation, filter system operation, and all warning and monitoring devices at all times that system is in operation. Assign an individual trained in the operation and maintenance of the system to provide this monitoring.

END OF SECTION

SECTION 01563 - DECONTAMINATION UNITS

PART 1 - GENERAL

RELATED DOCUMENTS:

General Provisions of Contract, including General and Supplementary Conditions and other Division 1 Specification sections, apply to Work of this section.

DESCRIPTION OF WORK:

Require that the Personnel Decontamination Unit be the only means of ingress and egress for the Work Area. Require that all materials exit the Work Area through the Equipment Decontamination Unit.

SUBMITTALS:

Before Start of Work submit written description and/or sketch of Personnel and Equipment Decontamination Units as specified in Section 01300.

PART 2 - PRODUCTS

A. Polyethylene Sheet: A single polyethylene film in the largest sheet size possible to minimize seams, 6 mils thick, clear, or frosted.

B. Reinforced Polyethylene Sheet: Where plastic sheet is the only separation between the Work Area and building exterior, provide translucent, nylon reinforced, laminated, flame resistant, polyethylene film that conforms to requirements set forth by the National Fire Protection Association Standard 701, Small Scale Fire Test for Flame-resistant Textiles and Films. Provide largest size possible to minimize seams, 6 mils thick, or frosted.

C. Duct Tape: Provide duct tape in 2 or 3 inch widths, with an adhesive specifically formulated to stick tenaciously to sheet polyethylene.

D. Shower Pan: Provide one piece waterproof shower pan.

E. Shower Walls: Provide walls fabricated from rigid, impervious, waterproof material. Structurally support as necessary for stability.

F. Shower Head and Controls: Provide a factory made shower head. Feed shower with water mixed from hot and cold supply lines. Arrange so that control of water temperature, flow rate, and shut off is from inside shower without outside aid.

G. Filters: Provide filter units on drain lines from showers or any other water source carrying asbestos-contaminated water from the Work Area. Provide units with disposal dual filter elements with the primary filter allowing 20 microns and smaller and secondary to pass particles 5 microns and smaller

H. Shower Stall: For Wash Down Station, provide leak tight shower enclosure with integrated drain pan. Structurally support as necessary for stability.

I. Sump Pump: Provide unit capable of pumping debris, sand, plaster or other materials washed off during decontamination procedures without damage to mechanism of pump.

PART 3 - EXECUTION

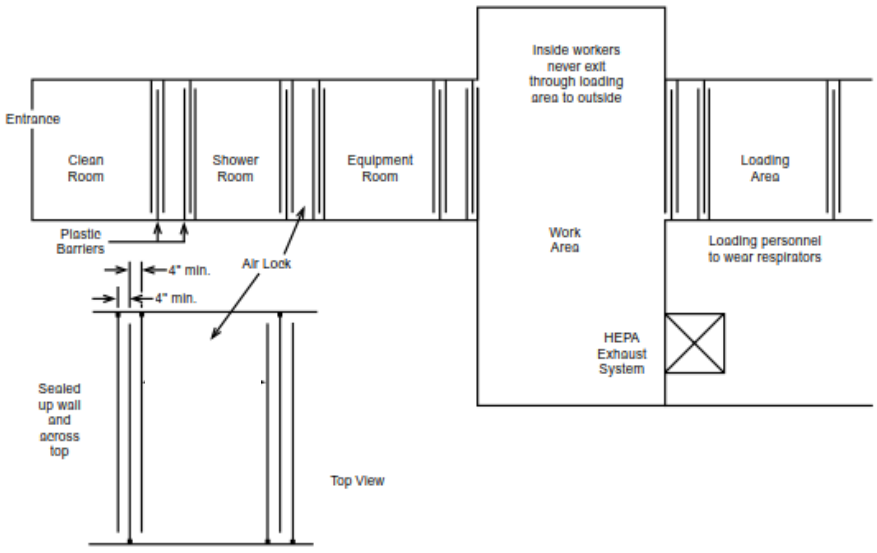
GENERAL

PERSONNEL DECONTAMINATION UNIT

A. Provide a Personnel Decontamination Unit consisting of a serial arrangement of the following connected rooms or spaces: Changing Room, Airlock, Shower Room, Airlock, Equipment Room. An example illustration is provided below.

Figure 1

Decontamination Area Arrangement



B. Require all persons without exception to pass through this decontamination unit for entry into and exiting from the Work Area for any purpose. Do not allow parallel routes for entry or exit. Do not remove equipment or materials through Personnel Decontamination

Unit. Provide temporary lighting within decontamination units as necessary to reach a lighting level of 100 foot candles.

C. Changing Room (Clean Room): Provide a room that is physically and visually separated from the rest of the building for the purpose of changing into protective clothing. Construct using polyethylene sheeting, at least 6 mil in thickness, to provide an airtight seal between the Changing Room and the rest of the building. Locate so that access to Work Area from Changing Room is through Shower Room. Separate Changing Room from the building by a sheet polyethylene flapped doorway.

1) Require workers to remove street clothes in this room, dress in clean disposable coveralls, and on respiratory protection equipment. Do not allow asbestos-contaminated items to enter this room. Require workers to enter this room either from outside the structure dressed in street clothes, or naked (or with a bathing suit as described in Section 01560) from the showers.
2) An existing room may be utilized as the Changing Room if it is suitably located and of a configuration whereby workmen may enter the Changing Room directly from the Shower Room. Protect all surfaces of room with sheet plastic. Authorization for this must be obtained from the Owner in writing prior to start of construction.
3) Maintain floor of Changing Room dry and clean at all times. Do not allow overflow water from shower to wet floor in the Changing Room.
4) Damp wipe all surfaces twice after each shift change with a disinfectant solution.
5) Provide a continuously adequate supply of disposable bath towels.
6) Provide posted information for all emergency phone numbers and procedures.
7) Provide one storage facility per employee.

D. Shower Room: Provide a completely water tight operational shower to be used for transit by cleanly dressed workers heading for the Work Area from the Changing Room, or for showering by workers headed out of the Work Area undressing in the Equipment Room.

E. Construct room by providing a shower pan and two shower walls in a configuration that will cause water running down walls to drip into pan. Install a freely draining wooden floor in shower pan at elevation of top of pan.

1) Separate this room from the rest of the building with air tight walls fabricated of 6 mil polyethylene.
2) Separate this room from the Changing and Equipment Rooms with airlocks fabricated of 6 mil polyethylene, at least three feet wide. Two airlocks are required, one between the Shower and Equipment Room, and one between the Shower and Changing Room.
3) Provide splashproof entrances to Changing and Equipment Rooms.

F. Provide shower head and controls.

G. Provide temporary extensions of existing hot and cold water and drainage as necessary for a complete and operable shower.

H. Provide a soap dish and a continuously adequate supply of soap and maintain in sanitary condition.

I. Arrange so that water from showering does not splash into the Changing or Equipment Rooms.

J. Arrange shut off and drain pump operation controls so that a single individual can shower without assistance from either inside or out-side of the Work Area.

K. Provide flexible shower head.

L. Pump waste to drain or to storage for disposal. If pumped to drain, provide 20 micron and 5 micron waste water filters in line to drain or waste water storage. Change filters daily or more often if necessary. Locate filters inside shower unit so that water lost during filter changes is caught by shower pan.

M. Provide Hose Bib.

N. Equipment Room (Contaminated Area): Require work equipment, footwear and additional contaminated work clothing to be left here. This is a change and transit area for workers. Separate this room from the Work Area by a curtained doorway consisting of three sheets of overlapping 6 mil polyethylene sheeting. One sheet shall be secured at the top and left side, the second sheet at the top and right side, and the third sheet on the top and left side. All sheets have weights attached to the bottom to insure that the sheets hang straight and maintain a seal over the doorway when not in use.

O. Work Area: Separate Work Area from the Equipment Room by poly-ethylene barriers. If the airborne asbestos level in the Work Area is expected to be high, as in dry removal, add an inter-mediate cleaning space between the Equipment Room and the Work Area. Damp wipe clean all surfaces after each shift change. Provide one additional floor layer of 6 mil polyethylene per shift change and remove contaminated layer after each shift.

P. Airlocks: Airlocks are small rooms in the decontamination area, at least 3 feet wide and three feet deep, separated from the rest of the Work Area by at least 6 mil. polyethylene walls. Airlocks must be placed between the Equipment Room and the Shower and between the shower and the Change Room. Each has two doors (Z-flaps) and in no case shall each of these doors be opened at the same time.

Q. Construction:

1) Walls and Ceiling: Construct air tight walls and ceiling using two layers polyethylene sheeting, at least 4 mil in thickness. Attach to existing building components or a temporary framework.
2) Floors: Use two layers (minimum) of 6 mil polyethylene sheeting to cover floors in the Equipment, Shower (underneath shower pan), and Changing Rooms. Provide an additional layer in the Equipment Room for every shift change expected.
3) Roll one layer of plastic from Equipment Room into Work Area after each shift change. Provide a minimum of two layers of plastic at all times. Use only clear plastic to cover floors.
4) Doors: Fabricate from three overlapping sheets (Z-Flaps) with openings a minimum of three feet wide. Configure so that sheeting overlaps adjacent surfaces. Sheets shall close after being released. Put arrows on sheets to indicate direction of overlap and travel. Provide a minimum length of three feet between entrance and exit of any room or airlock.
5) If the decontamination area is located on the exterior of a facility or within an area requiring abatement over the unit, construct the decontamination unit(s) with a minimum 1/4" plywood or acceptable solid construction for all exterior surfaces.
6) Visual Barrier: Where the decontamination area is immediately adjacent to and within view of occupied areas, provide a visual barrier of opaque polyethylene sheeting at least 6 mil in thickness so that worker privacy is maintained and work procedures are not visible to building occupants. Where the area adjacent to the decontamination area is accessible to the public, construct a solid barrier on the public side of the sheeting to protect the sheeting. Construct barrier with wood or metal studs covered with minimum 1/3" thick hardboard or 1/4" plywood. Where the solid barrier is provided, sheeting need not be opaque.

R. Electrical: Provide subpanel at Changing Room to accommodate all removal equipment. Power subpanel directly from a building electrical panel. Connect all electrical branch circuits in decontamination unit and particularly any pumps in Shower Room to a ground-fault circuit protection device.

ALTERNATE METHOD OF DECONTAMINATION

Alternate methods for decontamination may be submitted to the Designer and Owner for approval. Do not proceed with any such method(s) without prior written approval of the Designer and Owner.

DECONTAMINATION SEQUENCE

A. Entering Work Area:

1) Worker enters Changing Room and removes street clothing, puts on clean disposable coveralls and respirator, and passes through the Shower Room into the Equipment Room.
2) Any additional clothing and equipment left in Equipment Room needed by the worker in the area shall be put on in the Equipment Room.
3) Worker proceeds to Work Area.

B. Exiting Work Area:

1) Before leaving the Work Area, require the worker to remove all gross contamination and debris from overalls and feet. The worker then proceeds to the Equipment Room and removes all clothing except respiratory protection equipment (or bathing suit). Extra work clothing may be stored in contaminated end of the Equipment Room. Disposable coveralls are placed in a bag for disposal with other material.
2) The worker then proceeds to the shower, still wearing the respirator, and, using soap, washes off completely, paying special attention to the hair.
3) The worker washes off the respirator in the shower, then pulls it from his face and washes the facepiece to face seal area of the face and the respirator.
4) The worker then washes his hair again.
5) After completion of the shower, the worker removes the wet filters and discards them as contaminated waste, and proceeds to the clean room.
6) The worker then dresses in his street clothes, properly cleans and stores his respirator and exits the decontamination unit. Decontamination procedures shall be followed by all individuals leaving the Work Area.

EQUIPMENT DECONTAMINATION (LOADOUT) UNITS

A. Provide an Equipment Decontamination Unit for work areas over 1000 square feet consisting of a serial arrangement of rooms, Clean Room, Holding Room, Wash Room for removal of equipment and material from Work Area. Do not allow personnel to enter or exit Work Area through Equipment Decontamination Unit.

B. Wash Down Station: Provide an enclosed wash down unit located in Work Area just outside Wash Room as an equipment, bag, and container cleaning station.

C. Holding Room: Provide Holding Room as a drop location for tagged asbestos-containing materials passed from the Wash Room. Waste material and equipment will be rebagged here. Construct Holding Room of 2" x 4" wood (or equivalent) framing and polyethylene sheeting, at least 6 mil in thickness and located so that bagged materials cannot be passed from the Wash Room through the Holding Room to the Clean Room. Separate this room from the Wash Room with an airlock as described previously.

D. Clean Room: Provide Clean Room to isolate the Holding Room from the building exterior. Construct Clean Room of 2" x 4" wood (or equivalent) framing and polyethylene sheeting, at least 6 mil in thickness and locate to provide access to the Holding Room from the building exterior. Separate this room from the exterior by a single flap of 6-mil polyethylene sheeting and from the Holding Room by a door as described previously.

E. Equipment or Material: Take all equipment or material from the Work Area through the Equipment Decontamination Unit according to the following procedure:

1) At washdown station, thoroughly wet-clean contaminated equipment or sealed polyethylene bags and pass into Wash Room.
2) When passing equipment or containers into the Wash Room, close all doorways of the Equipment Decontamination Unit, other than the doorway between the Washdown Station and the Wash Room. Keep all outside personnel clear of the Equipment Decontamination Unit.
3) Once inside the Wash Room, wet-clean the bags and/or equipment.
4) When cleaning is complete, pass items into Holding Room. Close all doorways except the doorway between the Holding Room and the Clean Room.
5) Workers from the building exterior enter Holding Area and rebag and remove decontaminated equipment and/or containers for disposal. Waste material may be drummed at this point.
6) Require these workers to wear full protective clothing and wear appropriate respiratory protection.
7) At no time is worker from an uncontaminated area to enter the enclosure when a removal worker is inside.

CLEANING OF DECONTAMINATION UNITS

Clean debris and residue from inside of Decontamination Units on a daily basis. Damp wipe or hose down all surfaces after each shift change. Clean debris from shower pans on a daily basis.

SIGNS

Post an approximately 20 inch by 14 inch manufactured sign at each entrance to the Work Area displaying the following legend with letter sizes and styles of a visibility required by 29 CFR 1926.1101.

Legend

DANGER

ASBESTOS

MAY CAUSE CANCER
CAUSES DAMAGE TO LUNGS

AUTHORIZED PERSONNEL ONLY

WEAR RESPIRATORY PROTECTION AND PROTECTIVE CLOTHING IN THIS AREA

END OF SECTION

DIVISION 2

SITE WORK

SECTION 02081 - REMOVAL OF ASBESTOS CONTAINING MATERIALS

PART 1 - GENERAL

RELATED DOCUMENTS:

General Provisions of Contract, including General and Supplementary Conditions and Division 1 Specification sections, apply to Work of this section.

RELATED WORK SPECIFIED ELSEWHERE:

Summary of Work is specified in Section 01013.
Disposal of asbestos containing waste is specified in Section 02084.
Exhaust Ventilation Systems is specified in Section 01513.
Decontamination Units is specified in Section 01563.

WORK INCLUDED:

General: The Contractor will perform gross removal of asbestos containing materials. Refer to Section 01013 for the summary of Work required under this section.

SUBMITTALS:

Refer to Section 01300 for information on Submittals required under this section.

PART 2 - PRODUCTS:

A. Contractor must furnish all labor, materials, equipment, and subcontractors necessary for removal and disposal of ACM in a manner consistent with these specifications. These materials include but are not limited to:

1) Polyethylene sheeting (6 mil minimum thicknesses for critical and flooring use).

2) Staples, nails, spray cement, and tape capable of sealing joints and securing polyethylene to all necessary surfaces.

3) Surfactant mixed in recommended proportions.

4) Containers to receive and retain ACM with appropriate labels.

5) Warning signs and labels.

6) Glove bags specifically designed for its application.

7) Encapsulants / Lockdown.

8) Other Materials: All necessary materials for removal and disposal of asbestos in compliance with all applicable codes and regulations, and these specifications.

B. Deliver all materials in the original packages or containers bearing the name of the manufacturer and the brand name.

C. Store all materials subject to damage off the ground, away from wet or damp surfaces, and under cover sufficient to prevent damage or contamination.

D. Damaged or deteriorated materials shall not be used and must be removed from the job site. Materials that become contaminated with asbestos must be disposed of in accordance with the applicable regulations.

TOOLS AND EQUIPMENT

A. Provide suitable tools for asbestos removal, including but not limited to scrapers, brushes, razor knives, wrenches, tools for constructing containment and decontamination units, brooms, carts, and safety equipment.

B. Provide suitable air moving and exhaust equipment, including but not limited to:

1) A method for maintaining pressure differential of 0.02 inches of water column inside containment than outside. Refer to Section 01513 for requirements of Local Exhaust System Equipment.

2) HEPA-filtered vacuums.

3) Recording manometers for monitoring the pressure inside containment relative to outside.

C. No equipment shall cause suspension of ACM within work area or discharge of asbestos fibers outside of work area.

D. Transportation: As required for loading, temporary storage, transit, and unloading of contaminated waste without exposure to persons or property.

PART 3 - EXECUTION

PREPARATION:

GENERAL - WORK AREAS

A. Work Area: Is the location where asbestos-abatement work occurs. It is a variable of the extent of Work of the contract. For this project a "Work Area" is defined as the area in which asbestos removal is being performed. A "Work Area" is considered contaminated during the Work, and must be isolated from the balance of the building, and decontaminated at the completion of the asbestos-abatement work.

B. Critical barriers: All asbestos abatement work involving friable and non-friable ACM shall require the installation of critical barriers at all penetrations to the work area.

C. HVAC and Electrical Shut Down: HVAC systems serving the work area must be either shut down or temporarily capped on all asbestos abatement projects. Electrical systems serving the work area shall be shut down and secured, or special provisions with Owner must be made to ensure the safety of abatement workers while asbestos abatement is performed. All electrical equipment used by Contractor in the work area must be protected by GFI circuits.

D. Pre-Cleaning: When Consultant has determined that friable or damaged ACM have contaminated or potentially contaminated equipment and surfaces in the work area, Contractor must HEPA vacuum and wet-wipe these items before application of protective coating.

E. Polyethylene Sheeting: In general, all fixed objects and architectural surfaces in the work area must be protected from contamination during asbestos removal, or from damage during abatement. Polyethylene sheeting shall be flame retardant when used in areas of hot work.

F. Should the area beyond the Work Area(s) become contaminated with asbestos containing dust or debris as a consequence of the Work, immediately notify Designer, stop all abatement work and clean those areas in accordance regulations and approved procedures. Perform all such required cleaning or decontamination at no additional cost to Owner.

G. Asbestos Abatement Work Will Not Commence Until:

1) Arrangements have been made for disposal of waste at an acceptable site.

2) Appropriate waste containers are onsite.

3) Work Areas and decontamination enclosure systems and parts of the building required to remain in use are effectively segregated.

4) Tools, equipment and material waste receptors are on hand.

5) Proper notification has been made to the appropriate regulatory agency.

6) All other preparatory steps have been taken and applicable notices posted and permits obtained.

7) All worker training has been completed.

WORK AREA PREPARATION

A. WORK AREA PREPARATION FOR FULL CONTAINMENT

1) Post Warning signs and barrier tape in and around work area as required by all applicable regulatory agencies, and restrict access to work area to personnel approved by Contractor or Consultant.

2) All building ventilation air systems connected to the work area shall remain off and sealed during preparation and until the area has passed final visual inspection and final air sampling.

3) The Contractor shall implement an electrical practice protocol that includes, but is not limited to, lockout and GFCI shutdown as described in OSHA Construction Standard 29 CFR 1926.417. All electrical powered equipment utilized during the project shall have ground-fault protection as described in OSHA Construction Standards. All equipment and wiring shall be in compliance with National Fire Protection Association Standard 70, and the National Electrical Code.

4) Clean movable objects within the proposed work area using HEPA-filtered vacuums and/or wet cleaning methods as appropriate, and remove such objects from work area to a suitable temporary location.

5) Clean fixed objects within the proposed work area using HEPA-filtered vacuums and/or wet cleaning methods as appropriate, and enclosed objects with 6 mil polyethylene sheeting and tape.

6) Clean proposed work areas using HEPA-filtered vacuums and/or wet cleaning methods as appropriate. Methods that raise dust, such as dry sweeping or vacuuming with equipment not equipped with HEPA filters must no be used.

7) The Contractor shall thoroughly seal the work area for the duration of the work by completely sealing off all openings and fixtures in the work area, including, but not limited to, heating and ventilation ducts, doorways, corridors, windows, skylights, and lighting, with plastic sheeting taped securely in place. If the Contractor is using sealant materials to fill in small holes or cracks, the material shall have appropriate fire ratings. When isolating the work area along halls, corridors, etc., provide solid plywood barriers with joints sealed and two layers of 6-mil polyethylene on both sides. Entrances and exists from the work area will have air locks and triple barriers of plastic sheeting so that the work area is always closed off by one barrier when workers enter or exit.

8) All wall and flooring surfaces in the work area shall be covered with "true virgin poly" plastic sheeting taped securely in place to protect from water damage (or damage by sealants). Alternatively "shrink wrap" may be used to create outer containments. Two layers of 6 mil plastic sheeting are required on the floor. No water may be left standing in the floor at the end of the work day. Any costs associated with water damage or damage caused by securing plastic sheeting to areas inside or outside the abatement area shall be the Contractor's responsibility. Areas in which hot work is performed as part of the abatement, flame resistant polyethylene shall be used. Integrity of these seals shall be regularly checked and maintained by the Contractor.

9) Viewing windows (minimum 24"x24" of Plexiglas construction) shall be installed in multiple locations around the containment where feasible or as directed by the Owner, Designer, or Air Monitoring Firm. Locations shall be selected to provide line of sight to all abatement actions.

10) The Contractor shall set up a work area, loadout area and decontamination area as specified in section 01563. The decontamination facility outside of the work area shall consist of a change room, shower room, and equipment room with airlocks between each room. Any alterations to the designed decontamination facility shall be approved by the Designer.

11) The Contractor shall establish and mark emergency and fire exits from the work area. Emergency procedures shall have priority over established decontamination entry and exit procedures. Install portable fire extinguishers in compliance with National Fire Protection Association, Standard No. 10, portable extinguishers. A minimum of one (1) ABC dry chemical rated fire extinguisher shall be in the clean room plus one for every 3000 square feet in the work area. Areas involving hot work shall have additional fire extinguishers and a fire watch.

12) A system of HEPA-equipped air filtration devices shall be configured so that a pressure differential is established between the work area and the surrounding area (-0.02" to 0-.04" water column) as required in Section 1513. Tests will be made and documented daily to confirm this condition. Additional air filtration devices

are provided inside the work space so that the air is changed every 15 minutes. The total air exchange is the exhaust air plus the re-circulated air. **A HEPA-equipped air filtration device shall be considered to exhaust 75% of its rated capacity unless the Contractor shows actual test data, no more than 24 hours old, that shows a higher rate, but no higher than the rated exhaust.** The pressure differential is maintained at all times after preparation is complete and until the final visual inspection and air tests confirm the area is clean and acceptable for occupancy.

Air shall be exhausted outside the building. Any variations must be approved by the Designer. The exhaust system will be monitored by the Air Monitoring Firm for leaks. The Contractor shall check daily for leaks and log his checks in the bound log book. This includes checks internal to air moving devices.

High Efficiency Particulate Air (HEPA) filter exhaust systems equipped with new HEPA filters shall be used. Exhaust equipment and systems shall comply with ANSI Z9.2-79 and used according to manufacturer's recommendations.

B. ASBESTOS WORK AREA PREPARATION (NON-FRIABLE MATERIALS & GLOVE BAGS)

1) Post Warning signs and barrier tape in and around work area as required by all applicable regulatory agencies, and restrict access to work area to personnel approved by Contractor or Consultant.

2) Contractor shall establish an equipment room or area that is adjacent to the work area for the decontamination of workers and equipment contaminated with asbestos. The decontamination area shall consist of an area covered by an impermeable drop cloth on the floor or horizontal working surface, and be of sufficient size as to accommodate cleaning of equipment and removing personal protective equipment without spreading contamination beyond the area when acceptable by OSHA asbestos regulations.

3) Seal off all openings with critical barriers for interior removals. Critical barriers must be placed on penetrations that include but are not limited to; heating and ventilation ducts, doorways, corridors, and windows, with plastic sheeting taped securely in place. A polyethylene splash guard shall be placed on all walls or other surfaces adjacent to where floor tile mastic are being removed. The splash guard shall extend up the wall a minimum of three feet from the floor. Entrances and exists from the work area will have flap barriers of plastic sheeting.

4) All building ventilation air systems connected to the work area shall remain off and sealed during preparation and until the area has passed final visual inspection and final air sampling.

5) Clean and cover fixed surfaces in the proposed work area with polyethylene sheeting.

6) Provide polyethylene sheeting under materials to be removed. For roofing work, provide polyethylene sheeting at areas around collection bins to prevent soil contamination.

7) Install HEPA-filtered exhaust units in work area for interior removals. A pressure differential is not required.

8) The Contractor shall implement an electrical practice protocol that includes, but is not limited to, lockout and GFCI shutdown as described in OSHA Construction Standard 29 CFR 1926.417. All electrical powered equipment utilized during the project shall have ground-fault protection as described in OSHA Construction Standards. All equipment and wiring shall be in compliance with National Fire Protection Association Standard 70, and the National Electrical Code.

9) Maintain emergency and fire exits from work areas, or establish alternative exits satisfactory to the fire code.

ASBESTOS REMOVAL

A. METHOD OF REMOVAL GROSS REMOVAL WITHIN FULL CONTAINMENT

1) Prior to asbestos removal, the Contractor's equipment, work area and decontamination units will be inspected and approved by the Air Monitoring Firm.

2) The asbestos material shall be sprayed with water containing an appropriate wetting agent (amended water) to enhance penetration. The wetting agent shall be in a concentration recommended by the manufacturer. A fine spray/mist of the amended water shall be applied to reduce fiber release before and during removal of the asbestos material. The material shall be sufficiently saturated to meet the NESHAP requirements referenced in these specifications and to prevent emission of airborne asbestos fibers in excess of the exposure limits prescribed in the OSHA 29 CFR 1926.1101 Standard referenced in thee specifications.

3) The asbestos material shall be removed in small sections by two-man teams, on staging platforms when necessary. There shall be a separate water source for each asbestos team in the work area. Before beginning the next section, the material shall be packed while still wet into sealable plastic bags (6-mil minimum) and placed into suitable containers for transport. Bags and containers shall be marked with labels prescribed by the OSHA and NESHAP regulations referenced in these

specifications. All material shall be double bagged and the outside bag and container shall be clean before leaving the loadout area.

4) All loose asbestos material removed in the work area shall be bagged, sealed, and labeled properly before personnel breaks or end of shift.

5) All plastic sheeting, tape, cleaning material, clothing, and all other disposable material or items used in the work area shall be packed into sealable plastic bags (6-mil minimum). Each bag shall be individually sealed and placed in containers, at a minimum, a second bag, suitable for transport to the landfill.

6) All material shall be double bagged, and the outside bag and container shall be clean before leaving the loadout area. Bagged waste shall not accumulate in the work area. Contaminated materials, such as carpet, construction debris, pipe, gridwork, etc., may be wrapped in at least two (2) layers of plastic properly labeled and properly protected from perforations of the plastic (i.e., cardboard, multiple layers of plastic, etc.) as an alternative to using plastic bags. The bags and containers shall be marked with the OSHA label prescribed by the OSHA 29 CFR 1926.1101 Standard referenced in these specifications. In addition to the OSHA labeling requirements, all containers shall be labeled with the name of the waste generator and the location at which the waste was generated. Dispose of as specified in Section 02084.

7) All excess water (except shower water) shall be either combined with removed material or other absorptive material and properly disposed of as per EPA regulations, or filtered, using a 5-micron final filter, and disposed in the sanitary sewage system. Contractor shall not place water in storm drains, onto lawns, or into ditches, creeks, streams, rivers or other areas.

B. ASBESTOS REMOVAL (NON-FRIABLE MATERIALS)

1) Prior to asbestos removal, the Contractors equipment and work area will be reviewed by the Contractor's Onsite Supervisor to ensure compliance with regulations.

2) Wet nonfriable material with amended water and remove with appropriate equipment. Spray the asbestos material during the removal to maintain a wet condition and minimize asbestos fiber dispersion. The asbestos material shall be removed by means which do not render the material friable or prevent dust from being released during the removal. Do not subject the material to grinding, sanding, chipping or abrading. If the material should become friable, stop work and notify the designer.

3) Remove material in small sections. As it is removed place material in sealable 6 mil polyethylene bags or equivalent and place in appropriately labeled container

for transport. Dispose of as specified in Section 02084.

C. ASBESTOS REMOVAL (NON-FRIABLE FLOOR TILE & MASTIC)

1) Prior to asbestos removal, the Contractors equipment and work area will be reviewed by the Contractor's Onsite Supervisor to ensure compliance with regulations.

2) Remove binding strips or other restrictive molding from doorways, walls, etc. Clean and dispose of as non-asbestos waste.

3) The asbestos floor tile shall be removed with an infrared heat machine. Torches or open flame devices are prohibited.

4) The asbestos material shall be removed intact by heating the floor tile until it becomes soft and releases from the substrate. Gently pry the tile up without breaking the tile. When the tile is cool, place material in approved containers. Bags and containers shall be marked with labels prescribed by the OSHA and NESHAP regulations referenced in these specifications. Dispose of as specified elsewhere.

5) All loose asbestos material removed in the work area shall be bagged, sealed, and labeled properly before personnel breaks or end of shift.

6) Remove mastic residue using approved mastic removal solvents. Use solvents in accordance with manufacturers' instructions. Provide worker protection as required by safety data sheet (SDS) for any material used. Ensure solvent does not interfere with adherence with new flooring materials.

7) Mop floor with removal solvent as required by manufacturer's directions as required to completely remove all residue of mastic. No buffing machines shall be used.

8) All plastic sheeting, tape, cleaning material, clothing, and all other disposable material or items used in the work area shall be packed into sealable plastic bags (6-mil minimum). Dispose of as specified in Section 02084.

D. ASBESTOS REMOVAL (GLOVE BAG)

1) Prior to asbestos removal, the Contractors equipment, work area and decontamination units will be reviewed by the Contractor's Onsite Supervisor to ensure compliance with regulations.

2) Install glove bag according to manufacturer's recommendations, and in accordance with 29 CFR 1926.1101.

3) If pipe is removed with ACM in place, wet material with amended water and wrap pipe with two separate layers of 6 mil polyethylene. Install glove bag(s) in location(s) where pipe is to be cut and removed ACM. Seal exposed ends prior to cutting.

4) Remove ACM in small sections. Lower the insulation carefully in the bottom of the glove bag. Do not drop material. One glove bag must be used for each section of ACM to be removed. Sliding or re-use of a single glove bag is prohibited. Use appropriately sized bag for the dimensions of the material to be removed.

5) Prior to removal of the glove bag, ensure that all surfaces from which asbestos has been removed are clean of all visible material, and that the upper portion of the bag is clean of all visible waste. Spray all surfaces and tools in the glove bag with amended water. Wipe all sections of pipe with rag or appropriate material.

6) Use appropriate encapsulant on all surfaces inside the bag. Cover exposed insulation remaining on pipe with wettable fiberglass or other suitable material. Duct tape is not suitable.

7) Place tools inside sleeves of glove bag and isolate from interior of glove bag. Collapse bag using HEPA-filtered vacuum. Squeeze and twist bag at mid-level to isolate waste from upper portion of bag. Seal bag with duct tape. Vacuum the unsealed upper portion. Cut the glove bag along the top and sides, then remove from pipe. Cut off isolated sleeves containing any tools or supplies from the bag and place in bucket of water. Clean the tools in equipment room of decontamination area.

8) Place bag in appropriately labeled container for transport. In addition to the OSHA labeling requirements, all containers shall be labeled with the name of the waste generator and the location at which the waste was generated. Dispose of as specified in Section 02084.

9) All plastic sheeting, tape, cleaning material, clothing, and all other disposable material or items used in the work area shall be packed into sealable plastic bags (6-mil minimum).

E. ASBESTOS REMOVAL (ROOFING)

1) Prior to asbestos removal, the Contractors equipment and work area will be reviewed by the Contractor's Onsite Supervisor to ensure compliance with regulations.

2) Install critical barriers over all openings into building, adjacent buildings, or equipment within 30 feet of the work

3) Do not sand, abrade or grind roofing materials. Carry out all roofing removal in a manner that will minimize pulverizing, breaking or abrading of involved materials.

4) Use Manual methods which do not render roofing material "non-intact." These include the use of spud, spade, flat-blade or slicing tools, such as axes, mattocks, pry bars, spud bars, crow bars, shovels, flat-blade knives, and utility knifes, to slice, cut, strip-off, shear-under, or pry up the material.

5) Use wet methods during removal, unless wet methods are not feasible or will create safety hazards.

6) Do not drop or throw ACM that has been removed from a roof to the ground. Either carry or pass the ACM to the ground by hand, or lower it to the ground via covered, dust-tight chute, crane or hoist.

7) Upon being lowered transfer unwrapped material to a closed receptacle in such manner so as to preclude the dispersion of dust. Dispose of as specified in Section 02084.

F. ASBESTOS REMOVAL (GASKETS & PACKINGS)

1) Prior to asbestos removal, the Contractors equipment and work area will be reviewed by the Contractor's Onsite Supervisor to ensure compliance with regulations.

2) For gaskets removed in place use manual methods which do not render gasket "non-intact." Use wet methods during removal. Transfer waste to a waste bag and dispose of as specified in Section 02084.

3) Gaskets in flanges may be left in place and the piping cut on both ends to remove as a component. Transfer unwrapped material to a closed receptacle in such manner so as to preclude the dispersion of dust and disturbance of the gasket. Dispose of as specified in Section 02084.

FINAL INSPECTIONS AND CLEARANCE TESTING

A. The final visual inspection shall be performed in general accordance with ASTM E1368-14, Section 8.4, *Inspection at the Conclusion of the Project*. If the Air Monitoring Firm or Designer finds visible accumulations of asbestos debris in the work area after the abatement, Contractor shall repeat wet-cleaning until work area is in compliance, at Contractor's expense. All repeat visual inspections and air monitoring will be conducted only after all surfaces are dry. This shall be at the Contractor's expense.

B. When an inspection by the Air Monitoring Firm or Designer in the presence of Contractor determines that the area is free of accumulations of dust and visible debris, a lockdown encapsulant may be applied prior to final air testing.

C. Only critical barriers and negative air exhaust units shall remain in the work area prior to initiating final clearance. The Air Monitoring Firm will, for this project, test final air quality clearance utilizing aggressive (for contained areas) or static methods (for glovebag removals) coupled with TEM or PCM analysis, upon notice and confirmation from Contractor that Work Areas and all other decontaminated and cleaned areas are ready. Sampling shall not begin until no visible water remains in work area. Sufficient time shall be allowed by the contractor for surfaces to dry. A minimum of 5 samples in each work area are required. Each sample shall have a minimum volume of 1,200 L of air. A clearance criteria of less than seventy (70) structures per millimeter squared (s/mm^2) is required for TEM analysis and 0.01 f/cc for PCM analysis.

D. Reclean at Contractor's expense all areas which do not comply with the standard of cleaning for final clearance. Continue cleaning until the specified final air quality clearance level is achieved. Contractor shall bear cost of all follow-up test necessitated by the failure of the air tests to meet the specified final clearance level. Owner will deduct the cost of such follow-up tests from whatever monies remain due to the Contractor.

E. Following acceptance of clearance level test results and after Testing Laboratory determines Work Area(s) to be visually decontaminated, the Contractor shall dismantle decontamination enclosure systems and thoroughly wet clean immediate areas. The Contractor shall dispose of debris, used cleaning materials, unsalvageable materials used for sturdy barriers, and any other remaining materials. Consider the materials as contaminated and dispose of as specified in Section 02084.

SITEWORK COMPLETION

Asbestos abatement work is complete upon meeting the Work Area clearance criteria and fulfilling the following:

A. Remove all equipment, materials, debris from the Work site.

B. Remove all residue from adhesives used. Damage to furnishings or equipment during construction activities shall be restored to existing condition or better at the expense of the Contractor.

C. Dispose of all asbestos containing waste material as specified in Section 02084.

END OF SECTION

SECTION 02084 - DISPOSAL OF ASBESTOS-CONTAINING MATERIALS

PART 1 - GENERAL

RELATED DOCUMENTS:

General Provisions of Contract, including General and Supplementary Conditions and Division 1 Specification sections, apply to Work of this section.

DISPOSAL:

Asbestos-containing waste material and debris which is packaged in accordance with the provisions of this specification may be disposed of at designated sanitary landfills when certain precautions are taken.

Notice and Permit from Appropriate State and/or Local Agencies.

PART 2 - PRODUCTS (NOT APPLICABLE)

PART 3 - EXECUTION

GENERAL:

Remove sealed and labeled containers of contaminated material and wastes and dispose of accordingly in approved landfill as follows:

A. Notify Owner and/or Designer not less than 48 hours, prior to the proposed time of removing and delivery of contaminated waste to the landfill. The Owner and/or Designer may elect to observe this operation and provide photo documentation.

B. All containers (bags, drums, wrapped components) are labeled so that labels have the appearance of or are designed in accordance with OSHA 29 CFR 1926.1101, August 10, 1994, as amended, and any subsequent amendments and editions, and EPA 40 CFR 61.150, November 20, 1990, as amended, and any subsequent amendments and editions.

C. Asbestos waste must be transported and disposed of in a manner that will not permit the release of asbestos fibers into the air.

D. The cargo area of the transport vehicle shall be free of debris and lined with 6-mil polyethylene sheeting. Floor sheeting shall be installed first and shall extend up the

side walls at least 12 inches and shall be taped securely into place. Wall sheeting shall overlap by at least six inches and be taped into place. Ceiling sheeting shall extend down the side of the walls at least six inches and be taped into place.

E. If asbestos waste is transported exclusively in leak-tight clean drums, then polyethylene sheeting is not required.

F. Drums, bags and wrapped components that have been removed from the work area shall be loaded into an appropriate vehicle for transportation.

G. Any debris or residue observed on containers or surfaces outside of the work area resulting from abatement activities shall immediately be cleaned using wet methods and vacuum equipment with a HEPA filter.

H. Containers shall be carefully placed and not thrown into the truck cargo area. Drums shall be placed on a level surface in the cargo area and packed tightly or blocked and braced to prevent shifting and tipping. Large structural components shall be secured to prevent shifting.

I. Asbestos waste shall be transported directly to an approved landfill and shall not be stored at a location other than the abatement site.

J. Metal dumpsters or containers in which asbestos waste is temporarily stored at the abatement site shall be lined with 6-mil polyethylene sheeting to prevent contamination, and shall have doors and tops. The doors and tops shall be closed and locked except during loading or unloading asbestos waste.

K. Metal dumpsters or containers used for waste storage shall be labeled in accordance with OSHA 29 CFR 1926.1101, August 10. 1994 as amended, and any subsequent amendments and additions.

L. Bags shall be free of splits, rips and tears, and shall be carefully placed, not thrown, into the transport vehicle.

M. The vehicle used to transport asbestos wastes shall be labeled in accordance with 40 CFR 61.149(d)(1)(i,ii,and iii) as amended, and any subsequent amendments and editions.

N. Upon reaching the landfill, vehicles shall approach the dump location as closely as possible to unload asbestos waste.

O. Bags, drums and wrapped components shall be inspected when unloaded at the disposal site. Material in damaged containers shall be rewrapped, or shall be repacked in empty drums or bags.

P. Waste containers shall be place on the ground at the disposal site, not dropped or thrown out.

Q. Following the removal of all containerized waste, polyethylene sheeting shall be removed and discarded in bags or drums along with contaminated cleaning materials and protective clothing.

R. After the asbestos waste has been unloaded, the truck cargo area, including the floor, walls and ceiling, shall be decontaminated using wet methods or a vacuum equipped with a HEPA filter until no visible residues remain.

S. A waste shipment record shall be used and shall include the names of the facility owner, contractor and disposal site, the estimated quantity of asbestos waste, and the type and number of containers used. Each time the material changes custody, the record shall be sing by the persons receiving the waste. If a separate hauler is used, the hauler's name, address, telephone number and the driver's signature shall also appear on the record.

T. Commercial rental vehicles shall not be used to transport any asbestos, asbestos-containing, or asbestos-containing waste.

END OF SECTION

DIVISION 9

FINISHES/MATERIALS

SECTION 09805 - ENCAPSULATION OF ASBESTOS-CONTAINING MATERIALS

PART 1 - GENERAL

General provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification sections, apply to Work of this section.

DESCRIPTION OF WORK:

The Work includes lockdown encapsulation of substrates during decontamination procedures as outlined in Section 02081. Contractor must spot test and ensure encapsulant compatibility with future finishes such as paint, wall paper, etc. on all building substrates.

SUBMITTALS:

Product Data: Submit manufacturer's technical information including label analysis and application instructions for each material proposed for use.

Installation Instructions: Submit manufacturer's installation instruction with specific project requirements noted.

Performance Warrantee: Submit manufacturer's performance guarantee.

Certification: Submit written approval of entity installing the encapsulant from encapsulant manufacturer.

Safety Data Sheet: Submit the Safety Data Sheet, or equivalent, in accordance with the OSHA Hazard Communication Standard (29 CFR 1910.1200) for each surfactant and encapsulating material proposed for use on the Work. Include a separate attachment for each sheet INDICATING the specific worker protective equipment proposed for use with the material indicated.

DELIVERY AND STORAGE: Deliver materials to the job site in original, new and unopened packages and containers bearing manufacturer's name and label, and following information:

Name or title of material
Manufacturer's stock number and date of manufacture
Manufacturer's name
Thinning instructions
Application instructions

Deliver materials together with a copy of the OSHA Material Safety Data Sheet for the material.

JOB CONDITIONS: Apply encapsulating materials only when environmental conditions in the Work Area are as required by the manufacturer's instructions and compatibility with planned paint finished are assured.

PART 2 - PRODUCTS

Encapsulants: Provide lockdown type encapsulants specifically designed for binding and adhesion of trace asbestos contamination after asbestos removal.

Fire Safety: Use only materials that have a flame spread index of less than twenty-five, when dry, when tested in accordance with ASTM E-84.

PART 3 - EXECUTION:

GENERAL:

Prior to applying any encapsulating material, ensure that application of the sealer will not cause the base material to fail and allow the sealed material to fall of its own weight or separate from the substrate. Should Contractor doubt the ability of the substrate to support the sealant, request direction from the Engineer before proceeding with the encapsulating work.

Do Not Commence Application of encapsulating materials until all removal Work within the Work Area has been completed, and the Engineer has completed a visual inspection unless otherwise specified in this document.
WORKER PROTECTION:

Before beginning Work with any material for which a Material Safety Data sheet has been submitted, provide workers with the required protective equipment. Require that appropriate protective equipment be used at all times.

In addition to protective breathing equipment required by OSHA requirements or by this specification, use combination organic vapor - HEPA filters when organic solvent based encapsulants are in use.

Apply encapsulant to the substrates after all asbestos containing material has been removed and the Work Area has undergone final cleaning as specified in Section 02081, accordingly.

Apply encapsulant with an airless spray gun with air pressure and nozzle orifice as recommended by the encapsulant manufacturer.

Apply second coat over first coat in strict conformance with manufacturer's instructions.

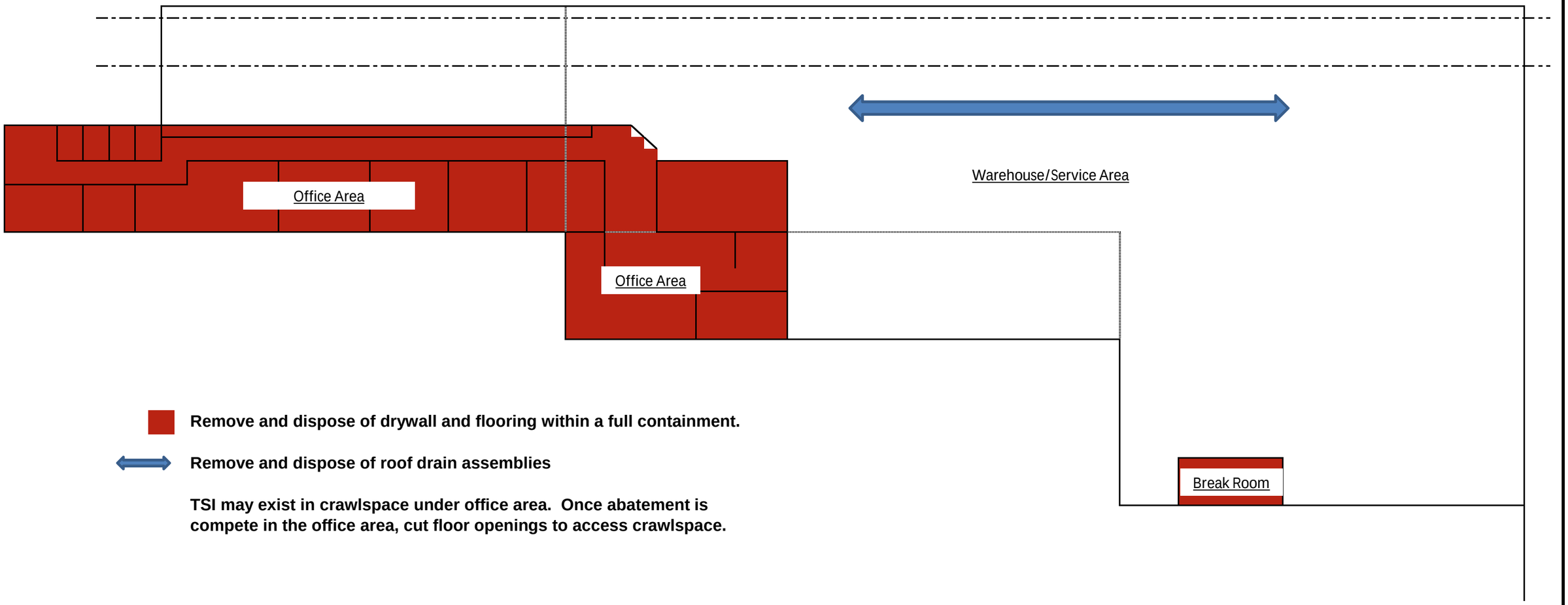
SEALING EXPOSED EDGES:

Seal edges of asbestos containing material exposed by removals up to an inaccessible spot such as a sleeve, wall penetration, etc. with two coats of encapsulant.

Prior to sealing, permit the exposed edges to dry completely to permit penetration of the sealer.

END OF SECTION

DRAWINGS



Remove and dispose of drywall and flooring within a full containment.

Remove and dispose of roof drain assemblies

TSI may exist in crawlspace under office area. Once abatement is compete in the office area, cut floor openings to access crawlspace.

N

Building material locations are approximated.

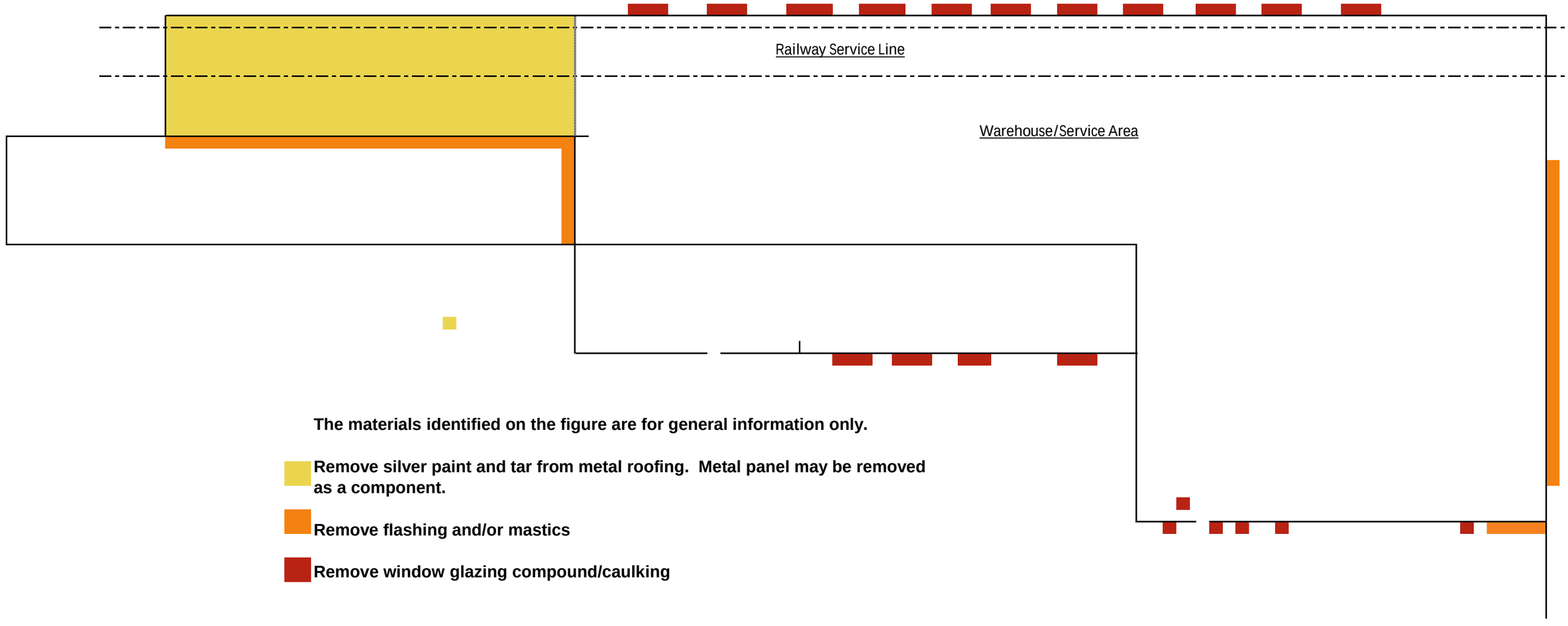
Project Manager:	CTW
Drawn By:	JAG
Checked By:	GKF
Approved By:	
Project No.	86167240
Scale:	N.T.S.
File Name:	
Date:	4/13/2017

Terracon
Consulting Engineers & Scientists
72 Pointe Circle Greenville, SC 29615
PH. (864) 292-2901 FAX. (864) 292-6361

ACM Abatement Notes - Interior Locations

Former Railroad Depot
124 Railroad Street
Pickens, South Carolina

Figure 1



The materials identified on the figure are for general information only.

Remove silver paint and tar from metal roofing. Metal panel may be removed as a component.

Remove flashing and/or mastics

Remove window glazing compound/caulking

N

Building material locations are approximated.

Project Manager: CTW	Project No. 86167240
Drawn By: JAG	Scale: N.T.S.
Checked By: GKF	File Name:
Approved By:	Date: 4/13/2017

Terracon
Consulting Engineers & Scientists
72 Pointe Circle Greenville, SC 29615
PH. (864) 292-2901 FAX. (864) 292-6361

ACM Abatement Notes - Exterior Materials

Former Railroad Depot
124 Railroad Street
Pickens, South Carolina

Figure 2

APPENDIX

Asbestos and Lead-Containing Paint Survey Report

FORMER RAILROAD BUILDING
124 RAILROAD STREET
PICKENS, PICKENS COUNTY, SC

November 30, 2015
Terracon Project No. 86157105

Prepared for:
City of Pickens
Pickens, South Carolina

Prepared by:
Terracon Consultants, Inc.
Taylors, South Carolina

Inspectors:
Jeffrey A. Gurrie and Kyle T. Lawing
License Nos. ASB-22352 and BI-01308
Inspected on November 4, 2015

November 30, 2015

City of Pickens
219 Pendleton Street
Pickens, SC 29671

Attn: Mr. Bruce Evilsizor

Re: Asbestos and Lead-Containing Paint Survey Report
Former Railroad Depot
124 Railroad Street
Pickens, Pickens County, South Carolina
Terracon Project No. 86157105

Dear Mr. Evilsizor:

Terracon Consultants, Inc. (Terracon) is pleased to present the results of the asbestos and lead-containing paint (LCP) survey performed on November 4, 2015 at the above site. We understand that this survey was requested in advance of the planned demolition of the onsite structure. Our services were performed in general accordance with our Proposal Number P86150369 dated October 29, 2015.

Asbestos was identified in samples of several materials. Lead containing paint (LCP) was also identified in the structure. Please refer to the report for details.

Terracon appreciates the opportunity to provide environmental consulting services to you on this project. If you should have any questions regarding this report, or if you need assistance with other matters, please contact the undersigned at (864) 292-2901.

Sincerely,
Terracon Consultants, Inc.

Kyle T. Lawing, GIT
Field Environmental Scientist

Jeffrey A. Gurrie
Senior Industrial Hygienist

George K. Flores, P.E.
Environmental Department Manager

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EXECUTIVE SUMMARY

Terracon Consultants, Inc. (Terracon) conducted an asbestos and lead-containing paint (LCP) survey of the Former Railroad Depot located at 124 Railroad Street in Pickens, Pickens County, South Carolina. Our survey was conducted on November 4, 2015 in general accordance with our Proposal No. P86150369 dated October 29, 2015. This Executive Summary is intended as an overview for the convenience of the reader. The complete report must be reviewed in its entirety prior to making decisions regarding this site.

The asbestos-containing material (ACM) survey was performed by South Carolina Department of Health and Environmental Control (SCDHEC) licensed asbestos building inspectors in general accordance with the sampling protocols established in Environmental Protection Agency (EPA) 40 Code of Federal Regulations (CFR) 763 - Asbestos Hazard Emergency Response Act (AHERA) and SCDHEC Regulation 61-86.1 Standards of Performance for Asbestos Projects. The LCP survey was performed by qualified personnel using an RMD LPA-1 X-ray fluorescence (XRF) device of various components of the structure. In addition, XRF readings were supplemented by collecting paint chip samples from selected components.

The subject structure is an approximately 20,000 square foot, single-story former railroad depot that has multiple roof heights and coverings, possibly the result of one or more additions. All areas are interconnected. The building sections are described in detail in the main body of this report.

Asbestos-Containing Materials

A total of 99 bulk samples were collected from the structure. A general layout of the structure, including sample locations, is included as Figure 1 in Appendix A. Sample results are summarized in Table 1 in Appendix B and copies of the laboratory data reports are provided in Appendix C. Site photographs are included in Appendix E.

Samples of the following materials contained asbestos:

- Silver paint and tar of metal roof;
- Base flashing of the office roof;
- Brown/black window/door caulk on newer windows in break area;
- Window glazing compound on warehouse/service area windows;
- Felt/mastic on the exterior rear wall;
- 9-inch beige floor tile within office;
- 9-inch brown floor tile within office;
- Brown sheet vinyl within office;
- 12-inch brown floor tile;
- Drywall joint compound;
- Roof flashing at exterior compressed gas storage area; and,
- Black sink undercoating.

The following materials were not sampled but were assumed to contain asbestos:

- Flashing/mastic at roof drain assemblies in the warehouse/service area; and,
- Apparent thermal system insulation (TSI) debris located within the crawlspace.

The above ACMs should be removed by a South Carolina-licensed asbestos abatement contractor in accordance with SCDHEC Asbestos Regulation 61-86.1 prior to commencing demolition activities. Third-party asbestos air monitoring will be required prior to, during, and following the removal of regulated materials (e.g., drywall joint compound). Based upon the quantity of regulated materials identified in the structure, an asbestos Project Design must be prepared by an SCDHEC licensed Project Designer.

In addition to the above ACMs, several other materials were identified to contain less than one percent (<1%) asbestos. These materials are not regulated by the EPA or SCDHEC for permitting or disposal; however, OSHA regulates materials which contain any amount of asbestos. Contractors disturbing this material must meet applicable OSHA regulations.

Federal, state and local regulations should be referred to in order to verify compliance before any actions are initiated on an ACM.

Lead-Containing Paint

Forty-six areas of painted components were analyzed by XRF within the structure and the results are summarized in Table 2 in Appendix A. None of the paints tested by XRF contained lead-based paint as defined by SCDHEC (greater than 0.7 mg/cm^2). A summary of the XRF readings are provided in Table 2, Appendix A.

To supplement the XRF data, eight paint chip samples were collected from selected components and submitted to a laboratory for lead analysis. All eight samples were reported to contain detectable amounts of lead. Samples of the black paint on interior masonry walls and white paint on interior wooden doors were reported to contain lead concentrations in excess of 0.060% which is the criterion for classifying a surface coating as “lead based paint” (LBP) for disposal purposes in South Carolina. A summary of paint chip sampling locations and results is provided in Table 3 (Appendix A) and the laboratory data report is included in Appendix C.

Painted demolition debris (including components coated with LBP) may be disposed of at a permitted Class II landfill, provided that the paint is intact on the substrate and that the landfill will accept such waste. All paint systems should be considered as lead-containing and the provisions in the OSHA Standard for Lead (29 CFR 1926.62) should be followed by contractor personnel conducting work activities.

ASBESTOS AND LEAD-CONTAINING PAINT SURVEY REPORT
FORMER RAILROAD DEPOT
124 RAILROAD STREET
PICKENS, PICKENS COUNTY, SOUTH CAROLINA
Terracon Project No. 86157105

1.0 INTRODUCTION

Terracon Consultants, Inc. (Terracon) conducted an asbestos and lead-containing paint survey of the Former Railroad Depot located at 124 Railroad Street in Pickens, Pickens County, South Carolina. The survey was conducted on November 4, 2015 in general accordance with our Proposal Number P86150369 dated October 29, 2015. We understand the survey was requested in advance of the planned demolition of this structure. EPA regulation 40 CFR 61, Subpart M, National Emission Standards for Hazardous Air Pollutants (NESHAP), prohibits the release of asbestos fibers to the atmosphere during renovation/demolition activities. NESHAP requires that potentially regulated asbestos-containing materials (ACM) be identified, classified and quantified prior to planned disturbances or demolition activities. Additionally, lead-containing paint (LCP) may require special handling and disposal considerations during demolition of the structure.

Suspect ACM was sampled in general accordance with the sampling protocols outlined in EPA Regulation 40 CFR 763 Subpart E763.86 (Asbestos Hazard Emergency Response Act, AHERA) and SCDHEC Regulation 61-86.1 Standards of Performance for Asbestos Projects. Building components were surveyed and homogeneous areas of suspect ACM were visually identified and documented. Although reasonable effort was made to survey accessible suspect materials, additional suspect but un-sampled materials could be located in walls, in voids or in other concealed areas. Samples were delivered to an accredited laboratory for analysis by Polarized Light Microscopy (PLM) and Transmission Electron Microscopy (TEM), as required.

The objective of the LCP evaluation was to identify lead containing paint systems on building components that may require special handling and/or disposal considerations upon demolition of the structure. SCDHEC regulates solid waste disposal under Regulation 61-107.19. Testing was performed to meet specific State disposal requirements and does not comply with all parts of the Occupational Health and Safety Administrations (OSHA) lead regulations. Testing to comply with OSHA regulations is not covered in our scope of work since it is the responsibility of the contractor to protect its employees. The LCP survey was performed by qualified personnel using an RMD LPA-1 X-ray fluorescence (XRF) device and supplemented by collecting paint chip samples of selected interior and exterior building components.

2.0 BUILDING DESCRIPTION

The largest portion of the structure, resembling a warehouse or service area, is approximately 20,000 square feet and is constructed on a concrete slab with masonry block walls. It appears rail cars passed through this area for service. The interior is largely unfinished with the exception of drywall and sheet vinyl within a small break room. The main roof is constructed with metal trusses with a lightweight concrete deck overlain by a built-up roof system. A newer roof system was wood framed and plywood decked with rolled roofing on top of the built-up system; other areas of the building have different roofing systems. Drywall, absent of joint compound, was observed within the interior ceiling. Metal framed windows with suspect glazing compound were observed at the northern and eastern sides of the structure. In addition, aluminum framed windows and doors were observed with suspect caulking in the area of the break room.

An apparent 1,300 foot addition is connected to the northwestern extent of the "warehouse/service area" portion of the site structure. The service railway extends from the area describe above and passes through this section. This area of the building appears similar in construction to the main area with the exception of the roofing system which is constructed of wooden beams and trusses with a painted metal roof.

Office areas occupy the south and southwest portions of this area. Exterior walls consist of masonry block walls with a brick veneer. Interior walls are finished with wood paneling or finished drywall with tongue-and-grove wood walls behind. The lower ceiling systems are either ceiling tiles or finished drywall with tongue-and-grove wood ceilings above. Floor coverings consist of carpet throughout the office with various styles of 9-inch floor tile, 12-inch floor tile, and/or sheet vinyl underlying the carpet. Office windows were sealed with suspect caulks. Forced air ducts insulated with fiberglass were observed throughout the office. Limited access to the crawlspace was observed through the service area. Due to access limitations and the low configuration of the crawlspace, it could not be determined if the pipe joints or elbows contain suspect materials; however from a distance white debris could be observed at elbows. Insulation on the straight runs appeared fiberglass.

3.0 ASBESTOS SURVEY

The asbestos survey was conducted by Messrs. Jeff Gurrie and Kyle Lawing, both SCDHEC licensed Asbestos Building Inspectors (License Nos. ASB-22352 and BI-1308, respectively). Copies of these gentlemen's licenses are provided in Appendix D. The survey was conducted on November 4, 2015, in general accordance with the sampling protocols established by EPA Regulation 40 CFR 763 (AHERA) and SCDHEC R61-86.1. A summary of survey activities is provided below.

3.1 Regulatory Overview

The asbestos NESHAP (40 CFR Part 61, Subpart M) regulates asbestos fiber emissions and asbestos waste disposal practices. It also requires the identification and classification of existing building materials prior to demolition or renovation activity. Under NESHAP, asbestos-containing building materials are classified as either friable, Category I non-friable or Category II non-friable ACM. Friable materials are those that, when dry, may be crumbled, pulverized or reduced to powder by hand pressure. Category I non-friable ACM includes packing materials, gaskets, resilient floor coverings and asphalt roofing products containing more than 1 percent (%) asbestos. Category II non-friable ACM are non-friable materials other than Category I materials that contain more than 1% asbestos.

Friable ACM, Category I and Category II non-friable ACM which is in poor condition and has become friable or which will be subjected to drilling, sanding, grinding, cutting or abrading and which could be crushed or pulverized during anticipated demolition activities are considered regulated ACM (RACM). RACM must be removed prior to renovation or demolition activities.

In the state of South Carolina, asbestos activities are regulated by the SCDHEC under the SCDHEC Regulation 61-86.1 Standards of Performance for Asbestos Projects. The SCDHEC require that any asbestos-related activity conducted in a public building be performed by personnel licensed by the SCDHEC. The owner or operator must provide the SCDHEC with written notification of planned abatement and removal activities prior to the commencement of those activities. The SCDHEC requires four day notification for non-friable projects and 10 day notification for RACM projects. Asbestos abatement must be performed by SCDHEC-licensed asbestos abatement contractors. A SCDHEC-licensed Project Designer shall prepare a written abatement design for each abatement project involving the removal of greater than 3,000 square, 1,500 linear, or 656 cubic feet of RACM. Third-party air monitoring must be conducted during the abatement of friable (regulated) ACM. The SCDHEC asbestos regulations can be found at http://www.scdhec.gov

The Occupational Safety and Health Administration (OSHA) Asbestos Standard for Construction Industry (29 CFR 1926.1101) regulates workplace exposure to asbestos. The OSHA standard requires that employee exposure to airborne asbestos fibers be maintained below 0.1 asbestos fibers per cubic centimeter of air (0.1 f/cc). The OSHA standard classifies construction and maintenance activities, which could disturb ACM, and specifies work practices and precautions which employers must follow when engaging in each class of regulated work. A full copy of the OSHA asbestos standard for general industry may be found at OSHA's website (www.osha.gov) and should be referenced for specific information.

3.2 Visual Assessment

Our survey activities began with visual observation of the interior and exterior of the building to identify apparent homogeneous areas of suspect ACM. A homogeneous area consists of building materials, which appear similar throughout in terms of color, texture and date of application. Building materials which were not identified as concrete, glass, wood, masonry, metal or rubber were considered suspect ACM.

Terracon lifted floor coverings, where possible, and did not observe additional flooring layers unless specifically mentioned herein; however, as Terracon could not assess beneath all floor coverings in all areas, there may be isolated areas of additional suspect material present beneath existing flooring. The crawlspace associated with the office portion of the structure was not safely accessible to Terracon at the time of our inspection; a limited observation of this area was made from the entrance to the crawlspace and it is possible that additional suspect materials, beyond those identified herein, could be present in the crawlspace. Additionally due to the newer roof system applied over the older roof systems, additional suspect flashings or mastics may be present.

3.3 Physical Assessment

A physical assessment of each homogeneous area of suspect ACM was conducted to assess the friability and condition of the materials. A friable material is defined by the EPA as a material, which can be crumbled, pulverized or reduced to powder by hand pressure when dry. Friability was assessed by physically touching suspect materials.

3.4 Sample Collection

Based on the results of the visual assessment, bulk samples of suspect ACM were collected in general accordance with SCDHEC sample collection protocols. Random samples of suspect materials were collected in each homogeneous area. Bulk samples were collected using wet methods as applicable to reduce the potential for fiber release. Samples were placed in sealable containers and labeled with unique sample numbers using an indelible marker. The selection of sample locations and frequency of sampling was based on Terracon's observations and the assumption that like materials in the same area are homogeneous in content. Sample locations are depicted on Figure 1 in Appendix A. A summary of the suspect ACM samples collected during the survey is presented in Table 1 in Appendix B. Suspect materials that were visually identified but that were not safely accessible to Terracon were assumed to contain asbestos.

3.5 Sample Analysis

Bulk samples were submitted using chain-of-custody procedures to EMSL Analytical, Inc. (EMSL) of Charlotte, North Carolina. EMSL is accredited under the National Voluntary Laboratory Accreditation Program NVLAP (No. 200841-0).

Asbestos analysis was performed by PLM with dispersion staining techniques per EPA EPA/600/R-93/116. The percentage of asbestos, where applicable, was determined by microscopical visual estimation. Per the SCDHEC Regulation 61-86.1 Standards of Performance for Asbestos Projects, negative results for non-friable organically bound (NOB) materials such as flooring, mastics, or roofing shall be verified with at least one TEM analysis. The additional analysis was performed by TEM in accordance with EPA/600/R-93/116 Section 2.5.5.1.

The laboratory was instructed to analyze samples from each homogeneous area until the first sample containing asbestos was identified. Subsequent samples within the same homogeneous area were not analyzed and were assumed to contain asbestos in similar content (Exception: all samples of drywall/joint compound were analyzed at Terracon's instruction).

3.6 Findings

A total of 99 bulk samples were collected from the structure. A general layout of the structure, including sample locations, is included as Figure 1 in Appendix A. Sample results are summarized in Table 1 in Appendix B and copies of the laboratory data reports are provided in Appendix C. Site photographs are included in Appendix E.

Samples of the following materials contained asbestos:

- Silver paint and tar of metal roof;
- Base flashing of the office roof;
- Brown/black window/door caulk on newer windows in break area;
- Window glazing compound on warehouse/service area windows;
- Felt/mastic on the exterior rear wall;
- 9-inch beige floor tile within office;
- 9-inch brown floor tile within office;
- Brown sheet vinyl within office;
- 12-inch brown floor tile;
- Drywall joint compound;
- Roof flashing at exterior compressed gas storage area; and,
- Black sink undercoating.

The following materials were not sampled but were assumed to contain asbestos:

- Flashing/mastic at roof drain elbows in the "warehouse" area; and,
- Apparent thermal system insulation (TSI) debris located within the crawlspace.

The above ACMs should be removed by a South Carolina-licensed asbestos abatement contractor in accordance with SCDHEC Asbestos Regulation 61-86.1 prior to commencing demolition activities. Third-party asbestos air monitoring will be required prior to, during, and following the removal of regulated materials (e.g., drywall joint compound). Based upon the quantity of regulated materials identified in the structure, an asbestos Project Design must be prepared by an SCDHEC licensed Project Designer. During the preparation of the Design it is recommended to perform limited destructive actions on non-ACM to assess if other materials are present in the lower roofing system and crawlspace which could not be fully assessed during this survey.

In addition to the above ACMs, several other materials were identified to contain less than one percent (<1%) asbestos. These materials are not regulated by the EPA or SCDHEC for permitting or disposal; however, OSHA regulates materials which contain any amount of asbestos. Contractors disturbing this material must meet applicable OSHA regulations.

A copy of this report must be submitted to the SCDHEC at least ten (10) working days prior to demolition when applying for an asbestos removal or demolition permit.

If additional suspect materials are discovered, samples of those materials should be collected and analyzed for asbestos type and content prior to disturbance. Federal, state and local regulations should be referred to in order to verify compliance before any actions are initiated on an ACM.

4.0 LEAD-CONTAINING PAINT SURVEY

4.1 Regulatory Overview

As applicable to this project, lead is regulated by the EPA, SCDHEC and OSHA. The EPA and SCDHEC regulate lead use, removal, and disposal, and OSHA regulates lead exposure to workers. The EPA defines lead-based paint as paint, varnish, stain, or other applied coating that contains lead equal to or greater than 1.0 mg/cm^2, 5,000 mg/kg, or 0.5% by dry weight as determined by laboratory analysis. The SCDHEC regulations require that painted demolition debris with a lead concentration greater than 0.06% by weight or 0.7 mg/cm^2 be disposed in a permitted Class II landfill. However, coatings that are delaminated, deteriorated, or flaking must be evaluated against the Toxicity Characteristic under state and federal hazardous waste management regulations. Lead-based paint is defined in SC Regulation 61-107.9, “Solid Waste Landfills and Structural Fill.” The hazardous waste Toxicity Characteristic is defined in the SC Hazardous Waste Management Regulation 61-79, at § 261.24, “Toxicity Characteristic.”

For the purpose of the OSHA lead standard, lead includes metallic lead, all inorganic lead compounds, and organic lead soaps. The OSHA *Lead Standard for Construction* (29 CFR 1926.62) applies to all construction work where an employee may be occupationally exposed to lead. All work related to construction, alteration, or repair (including painting and decorating) is included. The lead-in-construction standard applies to any detectable concentration of lead in paint, as even small concentrations of lead can result in unacceptable employee exposures depending upon on the method of removal and other workplace conditions. Under this standard, construction includes, but is not limited to, the following:

- Demolition or salvage of structures where lead or materials containing lead are present;
- Removal or encapsulation of materials containing lead;
- New construction, alteration, repair, or renovation of structures, substrates, or portions containing lead, or materials containing lead;
- Installation of products containing lead;
- Lead contamination/emergency clean-up;
- Transportation, disposal, storage, or containment of lead or materials containing lead on the site or location at which construction activities are performed; and,
- Maintenance operations associated with construction activities described above.

4.2 Sampling and Analytical Protocol

Analysis via XRF

A Radiation Monitoring Devices, Inc. LPA-1 XRF instrument was used to assess a surface coating for the presence of lead. The LPA-1 XRF is a handheld, field portable, energy dispersive spectrometer that is self-contained and battery powered. The LPA-1 implements the X-ray fluorescent technique using a sealed radioactive source (Cobalt-57) inside the instrument to excite atoms in the sample to produce fluorescent X-rays. When gamma-rays spontaneously emitted by the Cobalt-57 source strike the painted surface, lead atoms in the paint are “excited” and respond by emitting their own characteristic X-rays of unique energies. This response is known as fluorescence. X-ray measurements are made directly on the painted surface of component (unpainted components may also be tested for lead content). The instrument, which has been pre-calibrated by the manufacturer, is held against the surface to be analyzed. The X-ray detector unit, along with its associated microcomputer, is activated. After an instrument-selected analysis time, the concentration of lead on the surface and in the paint film is read directly from the instrument’s display in units of mg/cm^2.

The LPA-1 XRF (Serial Number 1601) instrument was operated in the Quick mode for this project. According to EPA guidelines, a lead measurement requires that a reading be taken with a 95% confidence level. This means that the actual measured lead value must exceed the regulatory action level by at least twice the uncertainty value to be considered valid. Uncertainty is not a constant value; it depends on time, measurement, substrate, and the actual lead concentration. The LPA-1 XRF in Quick Mode automatically, incorporates all of these factors to yield 95% confidence readings. Additionally, calibration checks were performed prior to and after the analysis to a 1.0 mg/cm^2 paint standard. Readings were within the manufacturer's specifications.

Analysis via Paint Chip

Paint chip samples were collected from selected components to assess lead content in various coatings observed in the structure, as a supplement to XRF testing. A total of eight paint chip samples were collected from the structure.

The paint samples were collected down to the surface substrate so as to include any underlying paint layers in the analysis. The random paint chip samples were selected based on current paint schemes and may not be inclusive of old paint systems covered with paneling, existing paint systems, or other materials. The paint chip samples were submitted to an ELLAP approved laboratory [EMSL Analytical, Inc. (No. 192283)] for analysis of lead by flame atomic absorption spectroscopy EPA Method No. SW-846 3050B/7000B. Results are reported in percent (%) by weight and are summarized in Table 3, Appendix A.

4.3 Findings and Recommendations

Forty-six areas of painted components were analyzed within the structure by XRF and the results are summarized in Table 2 in Appendix A. None of the paints tested by XRF contained lead-based paint as defined by SCDHEC (greater than 0.7 mg/cm^2). A summary of the XRF readings are provided in Table 2, Appendix A.

To supplement the XRF data, eight paint chip samples were collected from selected components and submitted to a laboratory for lead analysis. All eight samples were reported to contain detectable amounts of lead. Samples of the black paint on interior block walls and white paint on interior wooden walls were reported to contain lead concentrations in excess of 0.060% which is the criterion for classifying a surface coating as "lead based paint" (LBP) for disposal purposes in South Carolina. A summary of paint chip sampling locations and results is provided in Table 3 (Appendix A) and the laboratory data report is included in Appendix C.

Painted demolition debris (including components coated with LBP) may be disposed of at a permitted Class II landfill, provided that the paint is intact on the substrate and that the landfill will accept such waste. Pre-approval to dispose of any LBP-coated demolition debris should be obtained prior to the waste being shipped from the site. All paint systems should be considered as lead-containing and the provisions in the OSHA Standard for Lead (29 CFR 1926.62) should be followed by contractor personnel conducting work activities.

OSHA does not consider any method that relies solely on the analysis of bulk materials or surface content of lead (or other toxic material) to be acceptable for safely predicting employee exposure to airborne contaminants. Without air monitoring results or without the benefit of historical or objective data (including air sampling which clearly demonstrates that the employee cannot be exposed above the action level during any process, operation, or activity) the analysis of bulk or surface samples cannot be used to determine employee airborne exposure. The OSHA lead-in-construction standard was intended to apply to any detectable concentration of lead in paint, as even small concentrations of lead can result in unacceptable employee exposures depending upon on the method of removal and other workplace conditions. A full copy of the OSHA lead standard for construction industry may be found at OSHA's website (www.osha.gov) and should be referenced for specific information.

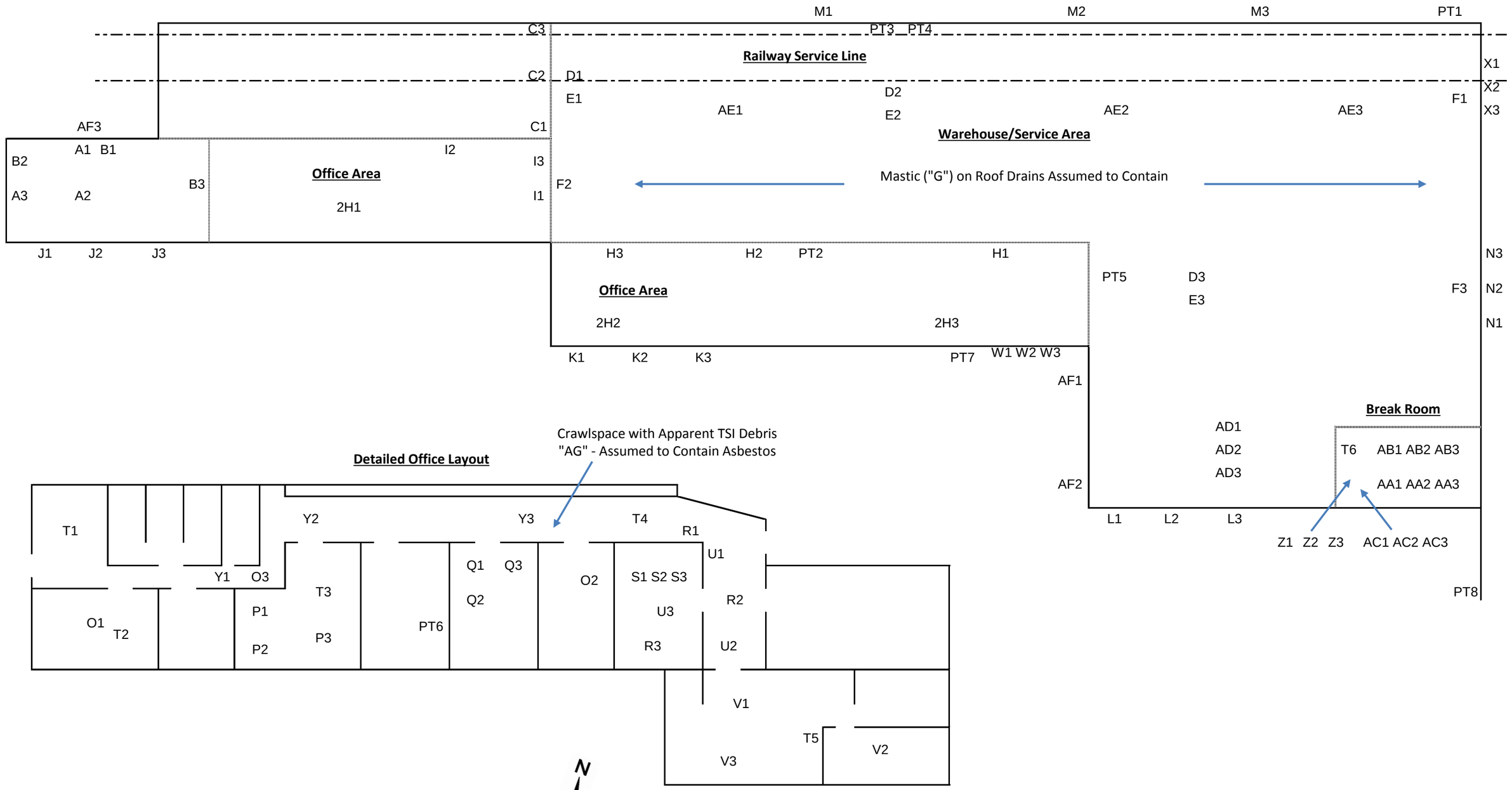
5.0 GENERAL COMMENTS

This survey was conducted in a manner consistent with the level of care and skill ordinarily exercised by members of the profession currently practicing under similar conditions in the same locale. The results, findings, conclusions and recommendations expressed in this report are based on conditions observed during our survey of the structures. The information contained in this report is relevant to the date on which this survey was performed, and should not be relied upon to represent conditions at a later date.

This report has been prepared on behalf of and exclusively for use by the City of Pickens for specific application to this project as discussed. Terracon does not warrant the work of regulatory agencies, laboratories or other third parties supplying information, which may have been used in the preparation of this report. No warranty, express or implied is made.

This report is not a bidding document. Contractors or consultants reviewing this report must draw their own conclusions regarding further investigation or remediation deemed necessary.

APPENDIX A
FIGURE



Note: Homogenous areas A through I, W, X, and 2H are associated with the roof systems of the structure.

Building layout and sample locations are approximated.

Project Manager: CTW	Project No. 86157105	Terracon Consulting Engineers & Scientists	General Layout / Sample Locations
Drawn By: KTL	Scale: N.T.S.	3534 Rutherford Rd. Taylors, SC 29687	Former Railroad Depot 124 Railroad Street Pickens, South Carolina
Checked By: GKF	File Name:	PH. (864) 292-2901 FAX. (864) 292-6361	Figure 1
Approved By:	Date: 11/4/2015		

APPENDIX B
TABLES

TABLE 1
ASBESTOS RESULTS SAMPLE SUMMARY

FORMER RAILROAD DEPOT
124 RAILROAD STREET
PICKENS, SOUTH CAROLINA
TERRACON PROJECT NO. 86157105

Sample Number	Analysis Method	Analytical Results	Material Description	Homogeneous Area	Classification	Friable / Non-Friable	Current Condition	Potential for Disturbance	Estimated Quantity
A1	PLM	Silver Paint - NAD Roofing - NAD	Built-Up Roofing (western-most roof section)	A	Miscellaneous	Non-Friable	Good	PD	650 SF
A2	PLM								
A3	TEM								
B1	PLM	Silver Paint - NAD Flashing - NAD	Base Flashing (western-most roof section)	B	Miscellaneous	Non-Friable	Good	PD	100 SF
B2	PLM								
B3	TEM								
C1	**PLM**	**Silver Paint - 2.4% Chrysotile Tar - 5% Chrysotile**	**Silver Paint and Tar (northwestern metal roof)**	**C**	**Miscellaneous**	**Non-Friable Category I**	**Good**	**PD**	**1,500 SF**
C2	**PLM**								
C3	**TEM**								
D1	PLM	Silver Paint - NAD Roofing - NAD	Rolled Roofing (warehouse roof, above "E")	D	Miscellaneous	Non-Friable	Good	PD	14,000 SF
D2	PLM								
D3	TEM								
E1	PLM	Roofing - NAD Concrete - NAD	Built-up Roofing & Lightweight Concrete (warehouse roof, underneath plywood and below "D")	E	Miscellaneous	Non-Friable	Damaged	PD	14,000 SF
E2	PLM								
E3	TEM								
F1	PLM	NAD	Base Flashing (warehouse roof)	F	Miscellaneous	Non-Friable	Good	PD	1,500 SF
F2	PLM								
F3	TEM								
Not Sampled	**--**	**PACM (Material Not Accessible)**	**Black Mastic on Roof Drain Assemblies (warehouse section)**	**G**	**Miscellaneous**	**Non-Friable Category I**	**Good**	**PD**	**20 SF**
	--								
	--								
H1	PLM	NAD	Base Flashing (eastern office area transition to warehouse)	H	Miscellaneous	Non-Friable	Good	PD	400 SF
H2	PLM								
H3	TEM								
I1	**PLM**	**Fibrous Layer - 5% Chrysotile Glass Layer - NAD Tar - NAD / Gray Layer - NAD**	**Base Flashing (western office roof section transition to northern and eastern roofs)**	**I**	**Miscellaneous**	**Non-Friable Category I**	**Good**	**PD**	**150 SF**
I2	**PLM**								
I3	**TEM**								

TABLE 1
ASBESTOS RESULTS SAMPLE SUMMARY

FORMER RAILROAD DEPOT
124 RAILROAD STREET
PICKENS, SOUTH CAROLINA
TERRACON PROJECT NO. 86157105

Sample Number	Analysis Method	Analytical Results	Material Description	Homogeneous Area	Classification	Friable / Non-Friable	Current Condition	Potential for Disturbance	Estimated Quantity
J1	PLM	NAD	White Window/Door Caulk (western office area, brick exterior)	J	Miscellaneous	Non-Friable	Good	PD	25 SF
J2	PLM								
J3	TEM								
K1	PLM	NAD	White Window/Door Caulk (eastern office area, block exterior)	K	Miscellaneous	Non-Friable	Good	PD	25 SF
K2	PLM								
K3	TEM								
L1	**PLM**	**8% Chrysotile**	**Brown/Black Window/Door Caulk (break room area)**	**L**	**Miscellaneous**	**Non-Friable Category II**	**Good**	**PD**	**10 SF 4 Windows 1 Door**
L2	**---**								
L3	**---**								
M1	**PLM**	**3% Chrysotile**	**Window Glazing Compound**	**M**	**Miscellaneous**	**Friable**	**Damaged**	**PD**	**30 SF**
M2	**--**								
M3	**--**								
N1	**PLM**	**Felt - <0.23% Chrysotile Mastic - 4% Chrysotile**	**Felt / Mastic on Eastern Exterior Wall**	**N**	**Miscellaneous**	**Non-Friable Category I**	**Good**	**PD**	**500 SF**
N2	**PLM**								
N3	**TEM**								
O1	**PLM**	**Carpet Mastic - NAD Tile - 5% Chrysotile Floor Tile Mastic - 0.45% Chrysotile**	**Brown Carpet Mastic on 9-Inch Beige Floor Tile with Brown Mastic**	**O**	**Miscellaneous**	**Non-Friable Category I**	**Good**	**LPD**	**1,200 SF**
O2	**PLM**								
O3	**TEM**								
P1	**PLM**	**Carpet Mastic - NAD Tile - 4% Chrysotile Floor Tile Mastic - <0.41% Chrysotile Felt - NAD**	**Brown Carpet Mastic on 9-Inch Brown Floor Tile with Black Mastic over Felt**	**P**	**Miscellaneous**	**Non-Friable Category I**	**Good**	**LPD**	**1,200 SF**
P2	**PLM**								
P3	**TEM**								
Q1	**PLM**	**<1% Chrysotile**	**Black Mastic (residual floor tile mastic in one office)**	**Q**	**Miscellaneous**	**Non-Friable Category I**	**Good**	**LPD**	**50 SF**
Q2	**PLM**								
Q3	**TEM**								
R1	**PLM**	**Carpet Mastic - NAD Sheet Vinyl - 10% Chrysotile Flooring Mastic - 0.48% Chrysotile**	**Tan Carpet Mastic over Brown Sheet Vinyl with Tan Mastic**	**R**	**Miscellaneous**	**Friable**	**Good**	**LPD**	**600 SF**
R2	**PLM**								
R3	**TEM**								
S1	**PLM**	**Sheet Vinyl - NAD White Mastic - NAD Floor Tile - 2% Chrysotile Brown Mastic - NAD**	**White Sheet Vinyl with White Mastic over Brown 12-Inch Floor Tile with Brown Mastic**	**S**	**Miscellaneous**	**Non-Friable Category I**	**Good**	**LPD**	**50 SF**
S2	**PLM**								
S3	**TEM**								

TABLE 1
ASBESTOS RESULTS SAMPLE SUMMARY

FORMER RAILROAD DEPOT
124 RAILROAD STREET
PICKENS, SOUTH CAROLINA
TERRACON PROJECT NO. 86157105

Sample Number	Analysis Method	Analytical Results	Material Description	Homogeneous Area	Classification	Friable / Non-Friable	Current Condition	Potential for Disturbance	Estimated Quantity
T1	**PLM**	**Drywall - NAD Joint Compound - 2% Chrysotile**	**Drywall and Joint Compound**	**T**	**Miscellaneous / Surfacing**	**Friable**	**Good**	**PD**	**2,500 SF**
T2	**PLM**								
T3	**PLM**								
T4	**PLM**								
T5	**PLM**								
T6	**PLM**								
U1	PLM	NAD	1' X 1' Random Pattern Ceiling Tile	U	Miscellaneous	Friable	Good	LPD	500 SF
U2	PLM								
U3	PLM								
V1	PLM	NAD	2' X 2' Random Pattern Ceiling Tile	V	Miscellaneous	Friable	Good	LPD	700 SF
V2	PLM								
V3	PLM								
W1	**PLM**	**5% Chrysotile**	**Flashing (on metal roof of compressed gas storage area)**	**W**	**Miscellaneous**	**Non-Friable Category I**	**Good**	**LPD**	**20 SF**
W2	**--**								
W3	**--**								
X1	PLM	NAD	Flashing (residual material along northeastern side of structure)	X	Miscellaneous	Non-Friable	Good	LPD	30 SF
X2	PLM								
X3	TEM								
Y1	PLM	NAD	Blown-In Insulation (over western office ceiling)	Y	TSI	Friable	Good	LPD	1,600 SF
Y2	PLM								
Y3	PLM								
Z1	**PLM**	**2% Chrysotile**	**Black Sink Undercoating**	**Z**	**Miscellaneous**	**Non-Friable Category II**	**Good**	**LPD**	**5 SF**
Z2	**--**								
Z3	**--**								
AA1	PLM	Flooring - NAD Mastic - NAD Leveler - NAD	Light Brown Sheet Vinyl with Tan Mastic and Leveling Compound	AA	Miscellaneous	Friable	Good	LPD	200 SF
AA2	PLM								
AA3	TEM								
AB1	**PLM**	**<1% Chrysotile**	**Yellow Mastic (under "AA")**	**AB**	**Miscellaneous**	**Non-Friable**	**Good**	**LPD**	**200 SF**
AB2	**PLM**								
AB3	**TEM**								

TABLE 1
ASBESTOS RESULTS SAMPLE SUMMARY

FORMER RAILROAD DEPOT
124 RAILROAD STREET
PICKENS, SOUTH CAROLINA
TERRACON PROJECT NO. 86157105

Sample Number	Analysis Method	Analytical Results	Material Description	Homogeneous Area	Classification	Friable / Non-Friable	Current Condition	Potential for Disturbance	Estimated Quantity
AC1	PLM	NAD	Tan and Brown Cove Base Mastic	AC	Miscellaneous	Non-Friable	Good	LPD	10 LF
AC2	PLM								
AC3	TEM								
AD1	PLM	NAD	Terrazzo Sink	AD	Miscellaneous	Non-Friable	Good	LPD	50 SF
AD2	PLM								
AD3	PLM								
AE1	PLM	NAD	Drywall (no joint compound observed)	AE	Miscellaneous	Friable	Good	LPD	14,000 SF
AE2	PLM								
AE3	PLM								
AF1	PLM	NAD	Block Wall Filler	AF	Miscellaneous	Friable	Good	LPD	1,000 SF
AF2	PLM								
AF3	TEM								
Not Sampled	--	**PACM**	**TSI Debris in CrawIspace (northeast corner of office area)**	**AG**	**TSI**	**Friable**	**Damaged**	**PD**	**5 CF**
	--								
	--								
2H1	PLM	NAD	Built-Up Roofing (office roof area)	2H	Miscellaneous	Non-Friable	Good	LPD	3,500 SF
2H2	PLM								
2H3	TEM								

Notes:
1) ***Quantities listed above are estimates to be used for inspection purposes only and should be field-verified for all other uses.***
2) Approximate sampling locations are depicted on Figure 1.

NA - Not Analyzed
PLM - Polarized Light Microscopy
TEM - Transmission Electron Microscopy
PACM - Presumed Asbestos Containing Material

LPD - Low potential for disturbance
PD - Potential for disturbance
PSD - Potential of significant disturbance
NAD - No Asbestos Detected

SF - square feet
LF - linear feet
CF - cubic feet

TABLE 2
LEAD IN PAINT SAMPLE SUMMARY (XRF)

FORMER RAILROAD DEPOT
124 RAILROAD STREET
PICKENS, SOUTH CAROLINA
TERRACON PROJECT NO. 86157105

XRF Sample Number	Area	Substrate	Component	Color	Concentration (mg/cm^2)
---	Calibration Check	---	---	---	1.0
---	Calibration Check	---	---	---	1.1
---	Calibration Check	---	---	---	1.1
1	Exterior - Front (West) Section	Metal	Post	Black	<0.1
2		Metal	Awning	White	<0.1
3		Wood	Door Casing	White	<0.1
4		Block	Wall	White	<0.1
5	Exterior - Warehouse South Side	Block	Wall	White	<0.1
6		Metal	Door	White	<0.1
7		Metal	Door Frame	White	<0.1
8		Block	Wall	White	<0.1
9		Metal	Door	Gray	<0.1
10		Metal	Door Frame	Gray	<0.1
11		Metal	Window Frame	Gray	<0.1
12		Metal	Door	White	<0.1
13		Metal	Door Frame	White	<0.1
14		Metal	Window Frame	White	<0.1
15		Wood	Rollup Door Frame	White	<0.1
16		Metal	Rollup Door	White	<0.1
17		Block	Wall	White	<0.1
18	Exterior - Retaining Wall	Block	Wall	White	<0.1
19	Exterior - Warehouse North Side	Wood	Rollup Door Frame	White	<0.1
20		Block	Wall	White	<0.1
21		Block	Wall	White	<0.1
22		Block	Wall	White	<0.1
23		Metal	Rear Door	White	<0.1
24		Metal	Rear Door	White	<0.1
25	Interior - Office	Drywall	Ceiling	White	<0.1
26		Wood	Door	Stain	<0.1
27		Wood	Window Trim	Stain	<0.1
28		Wood	Door	Stain	<0.1
29		Wood	Wall	Stain	<0.1
30		Wood	Window	Stain	<0.1
31		Wood	Trim	Stain	<0.1
32		Wood	Wall Behind Panel	White	<0.1
33	Interior - Warehouse	Wood	Wall	White	<0.1
34		Wood	Wall	Black	<0.1
35		Metal	Sliding Door	Red	<0.1
36		Metal	Structural Steel	White	<0.1
37		Block	Wall	White	<0.1
38		Block	Wall	Black	<0.1
39		Block	Wall	White	<0.1
40		Metal	Handrail	Yellow	<0.1
41		Metal	Structural Steel	White	<0.1
42		Block	Block Wall	Tan	<0.1
43		Metal	Window Frame	White	<0.1
44		Wood	Wall	Tan	<0.1
45		Block	Wall	White	<0.1
46		Block	Wall	White	<0.1
---	Calibration Check	---	---	---	1.1
---	Calibration Check	---	---	---	1.1
---	Calibration Check	---	---	---	1.0

Note: Negative or zero (0) XRF results are reported in Table 1 as <0.1 mg/cm^2 which is the lowest level of detection for this instrument.

TABLE 3
LEAD IN PAINT SAMPLE SUMMARY (PAINT CHIP)

FORMER RAILROAD DEPOT
124 RAILROAD STREET
PICKENS, SOUTH CAROLINA
TERRACON PROJECT NO. 86157105

Sample ID	Substrate	Component	Color	Lead Concentration (%)
PT1	**Block**	**Exterior - Wall**	**White**	**0.012**
PT2	**Metal**	**Interior - Structural Steel**	**White**	**0.043**
PT3	**Block**	**Interior - Wall**	**White**	**0.057**
PT4	**Block**	**Interior - Wall**	**Black**	**0.37**
PT5	**Block**	**Interior - Wall**	**Tan**	**0.018**
PT6	**Wood**	**Interior - Wall**	**White**	**0.17**
PT7	**Block**	**Exterior - Wall**	**White**	**0.012**
PT8	Block	Exterior - Retaining Wall	White	<0.010

Notes:
1) Values above the instrument detection limit are indicated in **bold type**
2) Values equal to or greater than 0.060 percent are **bolded** and shaded

APPENDIX C
LABORATORY REPORTS

EMSL Analytical, Inc.

376 Crompton Street Charlotte, NC 28273
Tel/Fax: (704) 525-2205 / (704) 525-2382
http://www.EMSL.com / charlottelab@emsl.com

EMSL Order: 411508340
Customer ID: GTER78
Customer PO:
Project ID:

Attention: Jeffrey Gurrie
Terracon Consultants, Inc.
3534 Rutherford Road
Taylors, SC 29687

Project: 86157105 - Railroad Depot

Phone: (864) 292-2901
Fax: (864) 292-6361
Received Date: 11/ 5/2015 9:20 AM
Analysis Date: 11/ 5/2015
Collected Date: 11/ 4/2015

Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy

			Non-Asbestos		Asbestos
Sample	**Description**	**Appearance**	**% Fibrous**	**% Non-Fibrous**	**% Type**
A1-Silver Paint *411508340-0001*	Built-Up Roofing	Silver Non-Fibrous Homogeneous	2% Cellulose	98% Non-fibrous (Other)	None Detected
A1-Tar with rocks *411508340-0001A*	Built-Up Roofing	Black Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
A1-Cellulose Layer *411508340-0001B*	Built-Up Roofing	Black Fibrous Homogeneous	30% Cellulose	70% Non-fibrous (Other)	None Detected
A1-Glass Layer *411508340-0001C*	Built-Up Roofing	Black Fibrous Homogeneous	15% Glass	85% Non-fibrous (Other)	None Detected
A2-Silver Paint *411508340-0002*	Built-Up Roofing	Silver Non-Fibrous Homogeneous	2% Cellulose	98% Non-fibrous (Other)	None Detected
A2-Tar w/ Rocks *411508340-0002A*	Built-Up Roofing	Black Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
A2-Cellulose Layer *411508340-0002B*	Built-Up Roofing	Black Fibrous Homogeneous	20% Cellulose	80% Non-fibrous (Other)	None Detected
A2-Glass Layer *411508340-0002C*	Built-Up Roofing	Silver Fibrous Homogeneous	10% Glass	90% Non-fibrous (Other)	None Detected
B1-Silver Paint *411508340-0003*	Roof Flashing	Silver Non-Fibrous Homogeneous	2% Cellulose	98% Non-fibrous (Other)	None Detected
B1-Tar *411508340-0003A*	Roof Flashing	Black Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
B1-Cellulose Layer *411508340-0003B*	Roof Flashing	Black Fibrous Homogeneous	15% Cellulose	85% Non-fibrous (Other)	None Detected
B1-Glass Layer *411508340-0003C*	Roof Flashing	Black Fibrous Homogeneous	15% Glass	85% Non-fibrous (Other)	None Detected
B2-Silver Paint *411508340-0004*	Roof Flashing	Silver Non-Fibrous Homogeneous	3% Cellulose	97% Non-fibrous (Other)	None Detected
B2-Tar *411508340-0004A*	Roof Flashing	Black Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
B2-Cellulose Layer *411508340-0004B*	Roof Flashing	Black Fibrous Homogeneous	20% Cellulose	80% Non-fibrous (Other)	None Detected

Report amended: 11/09/2015 09:54:22 Replaces initial report from: 11/06/2015 09:10:13 Reason Code: Client-Change to Sample ID

EMSL Analytical, Inc.
376 Crompton Street Charlotte, NC 28273
Tel/Fax: (704) 525-2205 / (704) 525-2382
http://www.EMSL.com / charlottelab@emsl.com

EMSL Order: 411508340
Customer ID: GTER78
Customer PO:
Project ID:

Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy

			Non-Asbestos		Asbestos
Sample	**Description**	**Appearance**	**% Fibrous**	**% Non-Fibrous**	**% Type**
B2-Glass Layer *411508340-0004C*	Roof Flashing	Silver Fibrous Homogeneous	15% Glass	85% Non-fibrous (Other)	None Detected
C1-Silver Paint *411508340-0005*	Silver Paint & Tar	Silver Non-Fibrous Homogeneous	2% Cellulose	98% Non-fibrous (Other)	None Detected
C1-Tar *411508340-0005A*	Silver Paint & Tar	Black Fibrous Homogeneous		10% Ca Carbonate 85% Non-fibrous (Other)	5% Chrysotile
C2-Silver Paint *411508340-0006*	Silver Paint & Tar	Silver Non-Fibrous Homogeneous	2% Cellulose	98% Non-fibrous (Other)	None Detected
C2-Tar *411508340-0006A*	Silver Paint & Tar				Stop Positive (Not Analyzed)
D1-Silver Paint *411508340-0007*	Rolled Roof - Top	Silver Non-Fibrous Homogeneous	2% Cellulose	98% Non-fibrous (Other)	None Detected
D1-Synthetic Layer *411508340-0007A*	Rolled Roof - Top	Black Fibrous Homogeneous	10% Synthetic	90% Non-fibrous (Other)	None Detected
D2-Silver Paint *411508340-0008*	Rolled Roof - Top	Silver Non-Fibrous Homogeneous	2% Cellulose	98% Non-fibrous (Other)	None Detected
D2-Synthetic Layer *411508340-0008A*	Rolled Roof - Top	Black Fibrous Homogeneous	8% Synthetic	92% Non-fibrous (Other)	None Detected
E1-Roofing *411508340-0009*	Built-Up Roof & Light Weight Concrete	Black Non-Fibrous Homogeneous	20% Cellulose	80% Non-fibrous (Other)	None Detected
E1-Lightweight Concrete *411508340-0009A*	Built-Up Roof & Light Weight Concrete	Gray Non-Fibrous Homogeneous	3% Cellulose	97% Non-fibrous (Other)	None Detected
E2-Roofing *411508340-0010*	Built-Up Roof & Light Weight Concrete	Black Non-Fibrous Homogeneous	25% Cellulose	75% Non-fibrous (Other)	None Detected
E2-Lightweight Concrete *411508340-0010A*	Built-Up Roof & Light Weight Concrete	Gray Non-Fibrous Homogeneous	2% Cellulose	98% Non-fibrous (Other)	None Detected
E3-Lightweight Concrete *411508340-0010B*	Built-Up Roof & Light Weight Concrete	Gray Non-Fibrous Homogeneous	3% Cellulose	97% Non-fibrous (Other)	None Detected
F1-Tar *411508340-0011*	Edge Flashing	Black Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
F1-Cellulose Layer *411508340-0011A*	Edge Flashing	Black Fibrous Homogeneous	20% Cellulose	80% Non-fibrous (Other)	None Detected
F2-Tar *411508340-0012*	Edge Flashing	Black Non-Fibrous Homogeneous	<1% Cellulose	100% Non-fibrous (Other)	None Detected

Report amended: 11/09/2015 09:54:22 Replaces initial report from: 11/06/2015 09:10:13 Reason Code: Client-Change to Sample ID

EMSL Analytical, Inc.
376 Crompton Street Charlotte, NC 28273
Tel/Fax: (704) 525-2205 / (704) 525-2382
http://www.EMSL.com / charlottelab@emsl.com

EMSL Order: 411508340
Customer ID: GTER78
Customer PO:
Project ID:

Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy

			Non-Asbestos		Asbestos
Sample	**Description**	**Appearance**	**% Fibrous**	**% Non-Fibrous**	**% Type**
F2-Cellulose Layer *411508340-0012A*	Edge Flashing	Black Fibrous Homogeneous	15% Cellulose	85% Non-fibrous (Other)	None Detected
H1-Synthetic Layer *411508340-0013*	Roof Flashing	Black Fibrous Homogeneous	15% Synthetic	85% Non-fibrous (Other)	None Detected
H1-Tar *411508340-0013A*	Roof Flashing	Black Non-Fibrous Homogeneous	2% Cellulose	98% Non-fibrous (Other)	None Detected
H1-Cellulose Layer *411508340-0013B*	Roof Flashing	Black Fibrous Homogeneous	30% Cellulose	70% Non-fibrous (Other)	None Detected
H1-Tan Layer *411508340-0013C*	Roof Flashing	Tan Fibrous Homogeneous	90% Cellulose 5% Glass	5% Non-fibrous (Other)	None Detected
H2-Synthetic Layer *411508340-0014*	Roof Flashing	Black Fibrous Homogeneous	8% Glass	92% Non-fibrous (Other)	None Detected
H2-Tar *411508340-0014A*	Roof Flashing	Black Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
H2-Cellulose Layer *411508340-0014B*	Roof Flashing	Black Fibrous Homogeneous	15% Cellulose	85% Non-fibrous (Other)	None Detected
H2-Tan Layer *411508340-0014C*	Roof Flashing	Brown/Tan Fibrous Homogeneous	85% Cellulose 4% Glass	11% Non-fibrous (Other)	None Detected
H3-Tan Layer *411508340-0014D*	Roof Flashing	Tan Fibrous Homogeneous	90% Cellulose 5% Glass	5% Non-fibrous (Other)	None Detected
I1-Fibrous Layer *411508340-0015*	Roof Flashing	Black Fibrous Homogeneous		95% Non-fibrous (Other)	5% Chrysotile
I1-Glass Layer *411508340-0015A*	Roof Flashing	Black Fibrous Homogeneous	15% Glass	85% Non-fibrous (Other)	None Detected
I1-Tar *411508340-0015B*	Roof Flashing	Black Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
I1-Gray Layer *411508340-0015C*	Roof Flashing	Gray/Tan Fibrous Homogeneous	10% Cellulose 70% Glass	20% Non-fibrous (Other)	None Detected
I2-Fibrous Layer *411508340-0016*	Roof Flashing				Stop Positive (Not Analyzed)
I2-Glass Layer *411508340-0016A*	Roof Flashing	Silver Fibrous Homogeneous	10% Glass	90% Non-fibrous (Other)	None Detected
I2-Tar *411508340-0016B*	Roof Flashing	Black Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
I2-Gray Layer *411508340-0016C*	Roof Flashing	Gray Fibrous Homogeneous	5% Cellulose 60% Glass	35% Non-fibrous (Other)	None Detected

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Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy

			Non-Asbestos		Asbestos
Sample	**Description**	**Appearance**	**% Fibrous**	**% Non-Fibrous**	**% Type**
I3-Gray Layer *411508340-0016D*	Roof Flashing	Gray/Tan Fibrous Homogeneous	10% Cellulose 70% Glass	20% Non-fibrous (Other)	None Detected
J1 *411508340-0017*	Exterior Caulk	White Non-Fibrous Homogeneous		25% Ca Carbonate 75% Non-fibrous (Other)	None Detected
J2 *411508340-0018*	Exterior Caulk	White Non-Fibrous Homogeneous		15% Ca Carbonate 85% Non-fibrous (Other)	None Detected
K1 *411508340-0019*	Exterior Caulk	White Non-Fibrous Homogeneous		35% Ca Carbonate 65% Non-fibrous (Other)	None Detected
K2 *411508340-0020*	Exterior Caulk	White Non-Fibrous Homogeneous		30% Ca Carbonate 70% Non-fibrous (Other)	None Detected
L1 *411508340-0021*	Brown & Black Caulk	Black Fibrous Homogeneous		5% Ca Carbonate 87% Non-fibrous (Other)	8% Chrysotile
L2 *411508340-0022*	Brown & Black Caulk				Stop Positive (Not Analyzed)
M1 *411508340-0023*	Window Glazing Compound	Gray Non-Fibrous Homogeneous		35% Ca Carbonate 62% Non-fibrous (Other)	3% Chrysotile
M2 *411508340-0024*	Window Glazing Compound				Stop Positive (Not Analyzed)
N1-Felt *411508340-0025* *Possible contamination*	Felt-Mastic	Black Fibrous Homogeneous	50% Cellulose	50% Non-fibrous (Other)	<1% Chrysotile
N1-Mastic *411508340-0025A*	Felt-Mastic	Black Non-Fibrous Homogeneous		96% Non-fibrous (Other)	4% Chrysotile
N2-Felt *411508340-0026* *Possible contamination*	Felt-Mastic	Black Non-Fibrous Homogeneous	60% Cellulose	40% Non-fibrous (Other)	<1% Chrysotile
N2-Mastic *411508340-0026A*	Felt-Mastic				Stop Positive (Not Analyzed)
O1-Top Mastic *411508340-0027*	9x9 Beige Floor Tile with Brown Mastic - Yellow Carpet Mastic on Top	Tan Non-Fibrous Homogeneous	<1% Cellulose	5% Ca Carbonate 95% Non-fibrous (Other)	None Detected
O1-Floor Tile *411508340-0027A*	9x9 Beige Floor Tile with Brown Mastic - Yellow Carpet Mastic on Top	Tan Non-Fibrous Homogeneous		30% Ca Carbonate 65% Non-fibrous (Other)	5% Chrysotile
O1-Bottom Mastic *411508340-0027B*	9x9 Beige Floor Tile with Brown Mastic - Yellow Carpet Mastic on Top	Brown/Tan Non-Fibrous Homogeneous	<1% Cellulose	8% Ca Carbonate 92% Non-fibrous (Other)	None Detected
O2-Top Mastic *411508340-0028*	9x9 Beige Floor Tile with Brown Mastic - Yellow Carpet Mastic on Top	Tan Non-Fibrous Homogeneous	<1% Synthetic	5% Ca Carbonate 95% Non-fibrous (Other)	None Detected

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Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy

			Non-Asbestos		Asbestos
Sample	**Description**	**Appearance**	**% Fibrous**	**% Non-Fibrous**	**% Type**
O2-Floor Tile *411508340-0028A*	9x9 Beige Floor Tile with Brown Mastic - Yellow Carpet Mastic on Top				Stop Positive (Not Analyzed)
O2-Bottom Mastic *411508340-0028B*	9x9 Beige Floor Tile with Brown Mastic - Yellow Carpet Mastic on Top	Black Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
P1-Top Mastic *411508340-0029*	Brown 9x9 FT with Black Mastic & Felt	Tan Non-Fibrous Homogeneous	<1% Cellulose	100% Non-fibrous (Other)	None Detected
P1-Floor Tile *411508340-0029A*	Brown 9x9 FT with Black Mastic & Felt	Brown Non-Fibrous Homogeneous		20% Ca Carbonate 76% Non-fibrous (Other)	4% Chrysotile
P1-Bottom Mastic *411508340-0029B* *Possible contamination*	Brown 9x9 FT with Black Mastic & Felt	Black Non-Fibrous Homogeneous	2% Cellulose	5% Ca Carbonate 93% Non-fibrous (Other)	<1% Chrysotile
P1-Red Layer *411508340-0029C*	Brown 9x9 FT with Black Mastic & Felt	Red Non-Fibrous Homogeneous	30% Cellulose	5% Ca Carbonate 65% Non-fibrous (Other)	None Detected
P1-Mastic *411508340-0029D*	Brown 9x9 FT with Black Mastic & Felt	Tan Non-Fibrous Homogeneous	2% Cellulose	10% Ca Carbonate 88% Non-fibrous (Other)	None Detected
P1-Felt *411508340-0029E*	Brown 9x9 FT with Black Mastic & Felt	Brown Fibrous Homogeneous	98% Cellulose	2% Non-fibrous (Other)	None Detected
P2-Top Mastic *411508340-0030*	Brown 9x9 FT with Black Mastic & Felt	Tan Non-Fibrous Homogeneous	<1% Cellulose	100% Non-fibrous (Other)	None Detected
P2-Floor Tile *411508340-0030A*	Brown 9x9 FT with Black Mastic & Felt				Stop Positive (Not Analyzed)
P2-Bottom Mastic *411508340-0030B* *Possible contamination*	Brown 9x9 FT with Black Mastic & Felt	Black Non-Fibrous Homogeneous	2% Cellulose	5% Ca Carbonate 93% Non-fibrous (Other)	<1% Chrysotile
P2-Red Layer *411508340-0030C*	Brown 9x9 FT with Black Mastic & Felt	Red Fibrous Homogeneous	35% Cellulose	65% Non-fibrous (Other)	None Detected
P2-Mastic *411508340-0030D*	Brown 9x9 FT with Black Mastic & Felt	Brown Non-Fibrous Homogeneous	<1% Cellulose	100% Non-fibrous (Other)	None Detected
P2-Felt *411508340-0030E*	Brown 9x9 FT with Black Mastic & Felt	Tan Non-Fibrous Homogeneous	95% Cellulose	5% Non-fibrous (Other)	None Detected
Q1 *411508340-0031*	Black Mastic	Black Non-Fibrous Homogeneous	<1% Cellulose	10% Ca Carbonate 90% Non-fibrous (Other)	None Detected
Q2 *411508340-0032*	Black Mastic	Tan/Black Non-Fibrous Homogeneous	<1% Cellulose	15% Ca Carbonate 85% Non-fibrous (Other)	<1% Chrysotile
R1-Top Mastic *411508340-0033*	Brown Sheet Vinyl	Tan Non-Fibrous Homogeneous		5% Ca Carbonate 95% Non-fibrous (Other)	None Detected
R1-Flooring *411508340-0033A*	Brown Sheet Vinyl	Brown/Gray/Tan Fibrous Homogeneous	1% Cellulose	89% Non-fibrous (Other)	10% Chrysotile

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Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy

			Non-Asbestos		Asbestos
Sample	**Description**	**Appearance**	**% Fibrous**	**% Non-Fibrous**	**% Type**
R1-Bottom Mastic *411508340-0033B* *Possible contamination*	Brown Sheet Vinyl	Brown/Tan Non-Fibrous Homogeneous		100% Non-fibrous (Other)	<1% Chrysotile
R2-Top Mastic *411508340-0034*	Brown Sheet Vinyl	Tan Non-Fibrous Homogeneous		5% Ca Carbonate 95% Non-fibrous (Other)	None Detected
R2-Flooring *411508340-0034A*	Brown Sheet Vinyl				Stop Positive (Not Analyzed)
R2-Bottom Mastic *411508340-0034B* *Possible contamination*	Brown Sheet Vinyl	Tan Non-Fibrous Homogeneous	3% Cellulose	97% Non-fibrous (Other)	<1% Chrysotile
S1-Flooring *411508340-0035*	White Sheet Vinyl with White Mastic over Brown FT & Mastic	Gray/White Fibrous Homogeneous	10% Cellulose 1% Glass	89% Non-fibrous (Other)	None Detected
S1-Mastic *411508340-0035A*	White Sheet Vinyl with White Mastic over Brown FT & Mastic	White Non-Fibrous Homogeneous	2% Cellulose	98% Non-fibrous (Other)	None Detected
S1-Floor Tile *411508340-0035B*	White Sheet Vinyl with White Mastic over Brown FT & Mastic	Brown Non-Fibrous Homogeneous		35% Ca Carbonate 63% Non-fibrous (Other)	2% Chrysotile
S1-Mastic *411508340-0035C*	White Sheet Vinyl with White Mastic over Brown FT & Mastic	Brown/Tan Non-Fibrous Homogeneous		5% Ca Carbonate 95% Non-fibrous (Other)	None Detected
S2-Flooring *411508340-0036*	White Sheet Vinyl with White Mastic over Brown FT & Mastic	Gray/White Fibrous Heterogeneous	10% Cellulose 1% Glass	89% Non-fibrous (Other)	None Detected
S2-Mastic *411508340-0036A*	White Sheet Vinyl with White Mastic over Brown FT & Mastic	White Non-Fibrous Homogeneous		5% Ca Carbonate 95% Non-fibrous (Other)	None Detected
S2-Floor Tile *411508340-0036B*	White Sheet Vinyl with White Mastic over Brown FT & Mastic				Stop Positive (Not Analyzed)
S2-Mastic *411508340-0036C*	White Sheet Vinyl with White Mastic over Brown FT & Mastic	Tan Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
T1-Drywall *411508340-0037*	Drywall & Joint Compound	Gray Non-Fibrous Homogeneous	10% Cellulose	90% Non-fibrous (Other)	None Detected
T1-Joint Compound *411508340-0037A*	Drywall & Joint Compound	Tan Non-Fibrous Homogeneous		30% Ca Carbonate 68% Non-fibrous (Other)	2% Chrysotile
T1-Tape *411508340-0037B*	Drywall & Joint Compound	Tan Non-Fibrous Homogeneous	60% Cellulose	40% Non-fibrous (Other)	None Detected
T2-Drywall *411508340-0038*	Drywall & Joint Compound	Gray Non-Fibrous Homogeneous	10% Cellulose	90% Non-fibrous (Other)	None Detected

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Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy

			Non-Asbestos		Asbestos
Sample	**Description**	**Appearance**	**% Fibrous**	**% Non-Fibrous**	**% Type**
T2-Joint Compound *411508340-0038A*	Drywall & Joint Compound	White Non-Fibrous Homogeneous		30% Ca Carbonate 70% Non-fibrous (Other)	None Detected
T2-Tape *411508340-0038B*	Drywall & Joint Compound	Tan Fibrous Homogeneous	100% Cellulose		None Detected
T3-Drywall *411508340-0039*	Drywall & Joint Compound	Gray Non-Fibrous Homogeneous	10% Cellulose	90% Non-fibrous (Other)	None Detected
T3-Joint Compound *411508340-0039A*	Drywall & Joint Compound	Tan Non-Fibrous Homogeneous		30% Ca Carbonate 68% Non-fibrous (Other)	2% Chrysotile
T3-Tape *411508340-0039B*	Drywall & Joint Compound	Tan Fibrous Homogeneous	100% Cellulose		None Detected
T4-Drywall *411508340-0040*	Drywall & Joint Compound	Gray Non-Fibrous Homogeneous	10% Cellulose	90% Non-fibrous (Other)	None Detected
T4-Joint Compound *411508340-0040A*	Drywall & Joint Compound	White/Beige Non-Fibrous Homogeneous		30% Ca Carbonate 70% Non-fibrous (Other)	None Detected
T5-Drywall *411508340-0041*	Drywall & Joint Compound	Brown/Gray Fibrous Homogeneous	10% Cellulose	90% Non-fibrous (Other)	None Detected
T5-Joint Compound *411508340-0041A*	Drywall & Joint Compound	White Non-Fibrous Homogeneous		40% Ca Carbonate 60% Non-fibrous (Other)	None Detected
T6-Drywall *411508340-0042*	Drywall & Joint Compound	Brown/Gray Fibrous Homogeneous	10% Cellulose	90% Non-fibrous (Other)	None Detected
T6-Joint Compound *411508340-0042A*	Drywall & Joint Compound	White Non-Fibrous Homogeneous		40% Ca Carbonate 60% Non-fibrous (Other)	None Detected
U1 *411508340-0043*	1x1 Random Pattern Ceiling Tile	Tan/White Fibrous Heterogeneous	99% Cellulose	1% Non-fibrous (Other)	None Detected
U2 *411508340-0044*	1x1 Random Pattern Ceiling Tile	Tan/White Fibrous Heterogeneous	99% Cellulose	1% Non-fibrous (Other)	None Detected
U3 *411508340-0045*	1x1 Random Pattern Ceiling Tile	Tan/White Fibrous Homogeneous	99% Cellulose	1% Non-fibrous (Other)	None Detected
V1 *411508340-0046*	2x2 Random Pattern Ceiling Tile	Gray/White Fibrous Heterogeneous	60% Cellulose 10% Min. Wool	10% Perlite 20% Non-fibrous (Other)	None Detected
V2 *411508340-0047*	2x2 Random Pattern Ceiling Tile	Gray/White Fibrous Heterogeneous	60% Cellulose 10% Min. Wool	10% Perlite 20% Non-fibrous (Other)	None Detected
V3 *411508340-0048*	2x2 Random Pattern Ceiling Tile	Gray/White Fibrous Homogeneous	60% Cellulose 10% Min. Wool	10% Perlite 20% Non-fibrous (Other)	None Detected
W1 *411508340-0049*	Roof Flashing	Black Fibrous Homogeneous		8% Ca Carbonate 87% Non-fibrous (Other)	5% Chrysotile

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Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy

			Non-Asbestos		Asbestos
Sample	**Description**	**Appearance**	**% Fibrous**	**% Non-Fibrous**	**% Type**
W2 *411508340-0050*	Roof Flashing				Stop Positive (Not Analyzed)
X1-Silver Paint *411508340-0051*	Roof Flashing	Silver Non-Fibrous Homogeneous	2% Cellulose	10% Ca Carbonate 88% Non-fibrous (Other)	None Detected
X1-Tar *411508340-0051A*	Roof Flashing	Black Non-Fibrous Homogeneous	10% Cellulose	5% Ca Carbonate 85% Non-fibrous (Other)	None Detected
X2-Silver Paint *411508340-0052*	Roof Flashing	Silver Non-Fibrous Homogeneous	2% Cellulose	10% Ca Carbonate 88% Non-fibrous (Other)	None Detected
X2-Tar *411508340-0052A*	Roof Flashing	Black Non-Fibrous Homogeneous	3% Cellulose	10% Ca Carbonate 87% Non-fibrous (Other)	None Detected
Y1 *411508340-0053*	Mineral Wool	Gray/Tan Fibrous Heterogeneous	99% Min. Wool	1% Non-fibrous (Other)	None Detected
Y2 *411508340-0054*	Mineral Wool	Gray Fibrous Heterogeneous	99% Min. Wool	1% Non-fibrous (Other)	None Detected
Y3 *411508340-0055*	Mineral Wool	Gray Fibrous Homogeneous	99% Min. Wool	1% Non-fibrous (Other)	None Detected
Z1 *411508340-0056*	Sink Coating	Black Non-Fibrous Homogeneous		15% Ca Carbonate 83% Non-fibrous (Other)	2% Chrysotile
Z2 *411508340-0057*	Sink Coating				Stop Positive (Not Analyzed)
AA1-Flooring *411508340-0058*	Light Brown Sheet Vinyl	Gray/Tan Fibrous Heterogeneous	6% Cellulose	5% Ca Carbonate 89% Non-fibrous (Other)	None Detected
AA1-Mastic *411508340-0058A*	Light Brown Sheet Vinyl	Tan Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
AA1-Leveler *411508340-0058B*	Light Brown Sheet Vinyl	White Non-Fibrous Homogeneous		15% Ca Carbonate 85% Non-fibrous (Other)	None Detected
AA2-Flooring *411508340-0059*	Light Brown Sheet Vinyl	Gray/Tan Fibrous Homogeneous	5% Cellulose	5% Ca Carbonate 90% Non-fibrous (Other)	None Detected
AA2-Mastic *411508340-0059A*	Light Brown Sheet Vinyl	Tan Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
AA2-Leveler *411508340-0059B*	Light Brown Sheet Vinyl	White Non-Fibrous Homogeneous		10% Ca Carbonate 90% Non-fibrous (Other)	None Detected
AA3-Leveler *411508340-0059C*	Light Brown Sheet Vinyl	Tan Non-Fibrous Homogeneous	1% Cellulose	10% Ca Carbonate 89% Non-fibrous (Other)	None Detected
AB1 *411508340-0060*	Yellow Mastic	Brown/Tan/Black Non-Fibrous Homogeneous	<1% Cellulose	15% Ca Carbonate 85% Non-fibrous (Other)	<1% Chrysotile
AB2 *411508340-0061*	Yellow Mastic	Brown/Tan Non-Fibrous Homogeneous	1% Cellulose	10% Ca Carbonate 89% Non-fibrous (Other)	None Detected

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			Non-Asbestos		Asbestos
Sample	**Description**	**Appearance**	**% Fibrous**	**% Non-Fibrous**	**% Type**
AC1 *411508340-0062*	Tan & Brown Cove Base Mastic	Brown/Tan Non-Fibrous Homogeneous	<1% Cellulose	8% Ca Carbonate 92% Non-fibrous (Other)	None Detected
AC2 *411508340-0063*	Tan & Brown Cove Base Mastic	Brown/Tan Non-Fibrous Homogeneous	1% Cellulose	5% Ca Carbonate 94% Non-fibrous (Other)	None Detected
AD1 *411508340-0064*	Terrazo	Brown/Gray/Tan Non-Fibrous Homogeneous		15% Quartz 5% Ca Carbonate 80% Non-fibrous (Other)	None Detected
AD2 *411508340-0065*	Terrazo	Gray/Tan Non-Fibrous Homogeneous		15% Quartz 5% Ca Carbonate 80% Non-fibrous (Other)	None Detected
AD3 *411508340-0066*	Terrazo	Brown/Gray/Tan Non-Fibrous Homogeneous		20% Quartz 5% Ca Carbonate 75% Non-fibrous (Other)	None Detected
AE1 *411508340-0067*	Drywall	Gray Non-Fibrous Homogeneous	8% Cellulose	92% Non-fibrous (Other)	None Detected
AE2 *411508340-0068*	Drywall	Gray Non-Fibrous Homogeneous	8% Cellulose	92% Non-fibrous (Other)	None Detected
AE3 *411508340-0069*	Drywall	Gray Non-Fibrous Homogeneous	5% Cellulose	95% Non-fibrous (Other)	None Detected
AF1 *411508340-0070*	Block Wall Coating	White Non-Fibrous Homogeneous		20% Quartz 5% Ca Carbonate 75% Non-fibrous (Other)	None Detected
AF2 *411508340-0071*	Block Wall Coating	Tan/White Non-Fibrous Homogeneous		20% Quartz 5% Ca Carbonate 75% Non-fibrous (Other)	None Detected
2H1-Cellulose Layer *411508340-0072*	Roofing	Black Non-Fibrous Homogeneous	30% Cellulose	70% Non-fibrous (Other)	None Detected
2H1-Glass Layer *411508340-0072A*	Roofing	Black Non-Fibrous Homogeneous	10% Glass	90% Non-fibrous (Other)	None Detected
2H1-Tar *411508340-0072B*	Roofing	Black Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
2H2-Cellulose Layer *411508340-0073*	Roofing	Black Fibrous Homogeneous	30% Cellulose	70% Non-fibrous (Other)	None Detected
2H2-Glass Layer *411508340-0073A*	Roofing	Black Fibrous Homogeneous	10% Glass	90% Non-fibrous (Other)	None Detected
2H2-Tar *411508340-0073B*	Roofing	Black Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected

Analyst(s)

Erin Guzowski (45)
Eric Loomis (50)
Kyle Collins (48)

Lee Plumley, Laboratory Manager
or Other Approved Signatory

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Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy

			Non-Asbestos		Asbestos
Sample	**Description**	**Appearance**	**% Fibrous**	**% Non-Fibrous**	**% Type**

Samples analyzed by EMSL Analytical, Inc. Charlotte, NC NVLAP Lab Code 200841-0, VA 3333 00312

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Received:	11/06/15 9:15 AM
Analysis Date:	11/9/2015
Collected:	11/4/2015

Project: **86157105 - Railroad Depot**

Test Report: Asbestos Analysis of Non-Friable Organically Bound Materials by TEM via EPA/600/R-93/116 Section 2.5.5.1

SAMPLE ID	DESCRIPTION	APPEARANCE	% MATRIX MATERIAL	% NON-ASBESTOS FIBERS	ASBESTOS TYPES
A3-Silver Paint *411508340-0074*	- Built-Up Roofing	Silver Non-Fibrous Heterogeneous	100	None	No Asbestos Detected
A3-Tar with Rocks *411508340-0075*	- Built-Up Roofing	Black Non-Fibrous Heterogeneous	100	None	No Asbestos Detected
A3-Cellulose Layer *411508340-0076*	- Built-Up Roofing	Black Non-Fibrous Heterogeneous	100	<0.1 Fibrous (other)	No Asbestos Detected
A3-Glass Layer *411508340-0077*	- Built-Up Roofing	Black Fibrous Heterogeneous	100	None	No Asbestos Detected
B3-Silver Paint *411508340-0078*	- Roof Flashing	Silver Non-Fibrous Heterogeneous	100	<0.32 Fibrous (other)	No Asbestos Detected
B3-Tar *411508340-0079*	- Roof Flashing	Black Non-Fibrous Heterogeneous	100	None	No Asbestos Detected
B3-Cellulose Layer *411508340-0080*	- Roof Flashing	Black Non-Fibrous Heterogeneous	99.8	0.17 Fibrous (other)	No Asbestos Detected
B3-Glass Layer *411508340-0081*	- Roof Flashing	Black Non-Fibrous Heterogeneous	100	None	No Asbestos Detected
C3-Silver Paint *411508340-0082*	- Silver Paint & Tar	Silver Non-Fibrous Heterogeneous	97.6	None	2.4% Chrysotile
Possible contamination					

Analyst(s)

Aaron Hartley (44)
Lee Plumley (1)

Lee Plumley, Laboratory Manager
or other approved signatory

Report Amended: 11/09/2015 16:48:55 Replaces Report Amended: 11/09/2015 09:54:22. Reason Code: Data Entry-Samples Added

EMSL Analytical, Inc.
376 Crompton Street, Charlotte, NC 28273
Phone/Fax: (704) 525-2205 / (704) 525-2382
http://www.EMSL.com charlottelab@emsl.com

EMSL Order:	411508340
CustomerID:	GTER78
CustomerPO:	
ProjectID:	

Attn: **Jeffrey Gurrie**
Terracon Consultants, Inc.
3534 Rutherford Road
Taylors, SC 29687

Phone:	(864) 292-2901
Fax:	(864) 292-6361
Received:	11/06/15 9:15 AM
Analysis Date:	11/9/2015
Collected:	11/4/2015

Project: **86157105 - Railroad Depot**

Test Report: Asbestos Analysis of Non-Friable Organically Bound Materials by TEM via EPA/600/R-93/116 Section 2.5.5.1

SAMPLE ID	DESCRIPTION	APPEARANCE	% MATRIX MATERIAL	% NON-ASBESTOS FIBERS	ASBESTOS TYPES
D3-Silver Paint *411508340-0083*	- Rolled Roof - Top	Silver Non-Fibrous Heterogeneous	100	None	No Asbestos Detected
D3-Synthetic Layer *411508340-0084*	- Rolled Roof - Top	Black Non-Fibrous Heterogeneous	100	None	No Asbestos Detected
E3-Roofing *411508340-0085*	- Built-Up Roof & Light Weight Concrete	Black Non-Fibrous Heterogeneous	100	None	No Asbestos Detected
F3-Tar *411508340-0086*	- Edge Flashing	Black Non-Fibrous Heterogeneous	100	<0.1 Fibrous (other)	No Asbestos Detected
F3-Cellulose Layer *411508340-0087*	- Edge Flashing	Black Non-Fibrous Heterogeneous	100	<0.1 Fibrous (other)	No Asbestos Detected
H3--Synthetic Layer *411508340-0088*	- Roof Flashing	Brown/Black Non-Fibrous Heterogeneous	100	None	No Asbestos Detected
H3--Tar *411508340-0089*	- Roof Flashing	Black Non-Fibrous Heterogeneous	100	None	No Asbestos Detected
H3--Cellulose Layer *411508340-0090*	- Roof Flashing	Black Non-Fibrous Heterogeneous	100	<0.1 Fibrous (other)	No Asbestos Detected
I3-Glass Layer *411508340-0091*	- Roof Flashing	Black Non-Fibrous Heterogeneous	100	None	No Asbestos Detected

Analyst(s)

Aaron Hartley (44)
Lee Plumley (1)

Lee Plumley, Laboratory Manager
or other approved signatory

This laboratory is not responsible for % asbestos in total sample when the residue only is submitted for analysis. The above report relates only to the items tested. This report may not be reproduced, except in full, without written approval by EMSL Analytical, Inc. Samples received in good condition unless otherwise noted. Unless requested by the client, building materials manufactured with multiple layers (i.e. linoleum, wallboard, etc.) are reported as a single sample.

Samples analyzed by EMSL Analytical, Inc. Charlotte, NC

Report Amended: 11/09/2015 16:48:55 Replaces Report Amended: 11/09/2015 09:54:22. Reason Code: Data Entry-Samples Added

EMSL Analytical, Inc.
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http://www.EMSL.com charlottelab@emsl.com

EMSL Order:	411508340
CustomerID:	GTER78
CustomerPO:	
ProjectID:	

Attn: **Jeffrey Gurrie**
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Fax:	(864) 292-6361
Received:	11/06/15 9:15 AM
Analysis Date:	11/9/2015
Collected:	11/4/2015

Project: **86157105 - Railroad Depot**

Test Report: Asbestos Analysis of Non-Friable Organically Bound Materials by TEM via EPA/600/R-93/116 Section 2.5.5.1

SAMPLE ID	DESCRIPTION	APPEARANCE	% MATRIX MATERIAL	% NON-ASBESTOS FIBERS	ASBESTOS TYPES
I3-Tar *411508340-0092*	- Roof Flashing	Black Non-Fibrous Heterogeneous	100	None	No Asbestos Detected
J3 *411508340-0093*	- Exterior Caulk	Gray Non-Fibrous Heterogeneous	100	<0.1 Fibrous (other)	No Asbestos Detected
K3 *411508340-0094*	- Exterior Caulk	Gray/White Non-Fibrous Heterogeneous	99.4	0.65 Fibrous (other)	No Asbestos Detected
N3-Felt *411508340-0095* Possible contamination	- Felt-Mastic	Black Non-Fibrous Heterogeneous	100	None	<0.23% Chrysotile
O3-Top Mastic *411508340-0096*	- 9x9 Beige Floor Tile with Brown Mastic - Yellow Carpet Mastic on Top	Tan Non-Fibrous Heterogeneous	99.7	0.34 Fibrous (other)	No Asbestos Detected
O3-Bottom Mastic *411508340-0097* Possible contamination	- 9x9 Beige Floor Tile with Brown Mastic - Yellow Carpet Mastic on Top	Brown/Tan Non-Fibrous Heterogeneous	99.6	None	0.45% Chrysotile
P3-Top Mastic *411508340-0098*	- Brown 9x9 FT with Black Mastic & Felt	Tan Non-Fibrous Heterogeneous	99.2	0.79 Fibrous (other)	No Asbestos Detected
P3-Bottom Mastic *411508340-0099* Possible contamination	- Brown 9x9 FT with Black Mastic & Felt	Black Non-Fibrous Heterogeneous	100	None	<0.41% Chrysotile

Analyst(s)

Aaron Hartley (44)
Lee Plumley (1)

Lee Plumley, Laboratory Manager
or other approved signatory

Report Amended: 11/09/2015 16:48:55 Replaces Report Amended: 11/09/2015 09:54:22. Reason Code: Data Entry-Samples Added

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EMSL Order:	411508340
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Project: **86157105 - Railroad Depot**

Test Report: Asbestos Analysis of Non-Friable Organically Bound Materials by TEM via EPA/600/R-93/116 Section 2.5.5.1

SAMPLE ID	DESCRIPTION	APPEARANCE	% MATRIX MATERIAL	% NON-ASBESTOS FIBERS	ASBESTOS TYPES
P3-Red Layer *411508340-0100*	- Brown 9x9 FT with Black Mastic & Felt	Red Non-Fibrous Heterogeneous	99.8	0.21 Fibrous (other)	No Asbestos Detected
P3-Mastic *411508340-0101*	- Brown 9x9 FT with Black Mastic & Felt	Tan Non-Fibrous Heterogeneous	100	None	No Asbestos Detected
P3-Felt *411508340-0102*	- Brown 9x9 FT with Black Mastic & Felt	Brown/Gray Non-Fibrous Heterogeneous	97.3	2.7 Fibrous (other)	No Asbestos Detected
Q3 *411508340-0103*	- Black Mastic	Black Non-Fibrous Heterogeneous	100	<0.55 Fibrous (other)	No Asbestos Detected
R3-Top Mastic *411508340-0104*	- Brown Sheet Vinyl	Tan Non-Fibrous Heterogeneous	100	<0.42 Fibrous (other)	No Asbestos Detected
R3-Bottom Mastic *411508340-0105*	- Brown Sheet Vinyl	Tan Non-Fibrous Heterogeneous	99.5	None	0.48% Chrysotile
S3-Flooring *411508340-0106*	- White Sheet Vinyl with White Mastic over Brown FT & Mastic	Beige Non-Fibrous Heterogeneous	100	None	No Asbestos Detected
S3-Mastic *411508340-0107*	- White Sheet Vinyl with White Mastic over Brown FT & Mastic	Tan Non-Fibrous Heterogeneous	100	None	No Asbestos Detected
S3-Mastic *411508340-0108*	- White Sheet Vinyl with White Mastic over Brown FT & Mastic	Tan Non-Fibrous Heterogeneous	100	None	No Asbestos Detected

Analyst(s)

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Project: **86157105 - Railroad Depot**

Test Report: Asbestos Analysis of Non-Friable Organically Bound Materials by TEM via EPA/600/R-93/116 Section 2.5.5.1

SAMPLE ID	DESCRIPTION	APPEARANCE	% MATRIX MATERIAL	% NON-ASBESTOS FIBERS	ASBESTOS TYPES
X3-Silver Paint *411508340-0109*	- Roof Flashing	Silver Non-Fibrous Heterogeneous	100	None	No Asbestos Detected
X3-Tar *411508340-0110*	- Roof Flashing	Black Non-Fibrous Heterogeneous	98.0	2.0 Fibrous (other)	No Asbestos Detected
AA3-Flooring *411508340-0111*	- Light Brown Sheet Vinyl	Beige Non-Fibrous Heterogeneous	100	None	No Asbestos Detected
AA3-Mastic *411508340-0112*	- Light Brown Sheet Vinyl	Tan Non-Fibrous Heterogeneous	97.8	2.2 Fibrous (other)	No Asbestos Detected
AB3 *411508340-0113*	- Yellow Mastic	Brown/Tan Non-Fibrous Heterogeneous	99.4	0.60 Fibrous (other)	No Asbestos Detected
AF3 *411508340-0114*	- Block Wall Coating	Gray/White Non-Fibrous Heterogeneous	100	<0.42 Fibrous (other)	No Asbestos Detected
2H3-Cellulose Layer *411508340-0115*	- Roofing	Black Non-Fibrous Heterogeneous	100	<0.1 Fibrous (other)	No Asbestos Detected
2H3-Glass Layer *411508340-0116*	- Roofing	Black Non-Fibrous Heterogeneous	100	None	No Asbestos Detected
2H3-Tar *411508340-0117*	- Roofing	Black Non-Fibrous Heterogeneous	100	None	No Asbestos Detected

Analyst(s)

Aaron Hartley (44)
Lee Plumley (1)

Lee Plumley, Laboratory Manager
or other approved signatory

Report Amended: 11/09/2015 16:48:55 Replaces Report Amended: 11/09/2015 09:54:22. Reason Code: Data Entry-Samples Added

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EMSL Order:	411508340
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Taylors, SC 29687

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Project: **86157105 - Railroad Depot**

Test Report: Asbestos Analysis of Non-Friable Organically Bound Materials by TEM via EPA/600/R-93/116 Section 2.5.5.1

SAMPLE ID	DESCRIPTION	APPEARANCE	% MATRIX MATERIAL	% NON-ASBESTOS FIBERS	ASBESTOS TYPES
AC3 *411508340-0118*	- Tan & Brown Cove Base Mastic	Brown/Tan Non-Fibrous Heterogeneous	99.6	0.39 Fibrous (other)	No Asbestos Detected

Analyst(s)

Aaron Hartley (44)
Lee Plumley (1)

Lee Plumley, Laboratory Manager
or other approved signatory

Report Amended: 11/09/2015 16:48:55 Replaces Report Amended: 11/09/2015 09:54:22. Reason Code: Data Entry-Samples Added

OrderID: 411508340

EMSL ANALYTICAL, INC.
LABORATORY • PRODUCTS • TRAINING

Asbestos Bulk Building Material Chain of Custody

EMSL Order Number (*Lab Use Only*): 411508340

EMSL Analytical, Inc.
376 Crompton Street
Charlotte, NC 28273
PHONE: (704) 525-2205
FAX: (704) 525 2382

Company : Terracon	**EMSL-Bill to:** ☑ Same ☐ Different If Bill to is Different note instructions in Comments** *Third Party Billing requires written authorization from third party*
Street: 3534 Rutherford Road	
City: Taylors **State/Province:** SC	**Zip/Postal Code:** 29687 **Country:** United States
Report To (Name): Jeffrey Gurrie	**Telephone #:** 864-360-7572
Email Address: jagurrie@terracon.com	**Fax #:** **Purchase Order:**
Project Name/Number: 86157105/Railroad Depot	**Please Provide Results:** ☐ Fax ☑ Email ☐ Mail
U.S. State Samples Taken: SC	**CT Samples:** ☐ Commercial/Taxable ☐ Residential/Tax Exempt

Turnaround Time (TAT) Options* – Please Check

☐ 3 Hour ☐ 6 Hour ☒ 24 Hour ☐ 48 Hour ☐ 72 Hour ☐ 96 Hour ☐ 1 Week ☐ 2 Week

**For TEM Air 3 hr through 6 hr, please call ahead to schedule.*There is a premium charge for 3 Hour TEM AHERA or EPA Level II TAT. You will be asked to sign an authorization form for this service. Analysis completed in accordance with EMSL's Terms and Conditions located in the Analytical Price Guide.*

PLM - Bulk (reporting limit)	TEM – Bulk
☒ PLM EPA 600/R-93/116 (<1%)	☒ TEM EPA NOB – EPA 600/R-93/116 Section 2.5.5.1
☐ PLM EPA NOB (<1%)	☐ NY ELAP Method 198.4 (TEM)
Point Count ☐ 400 (<0.25%) ☐ 1000 (<0.1%)	☐ Chatfield Protocol (semi-quantitative)
Point Count w/Gravimetric ☐ 400 (<0.25%) ☐ 1000 (<0.1%)	☐ TEM % by Mass – EPA 600/R-93/116 Section 2.5.5.2
☐ NIOSH 9002 (<1%)	☐ TEM Qualitative via Filtration Prep Technique
☐ NY ELAP Method 198.1 (friable in NY)	☐ TEM Qualitative via Drop Mount Prep Technique
☐ NY ELAP Method 198.6 NOB (non-friable-NY)	**Other**
☐ OSHA ID-191 Modified	☐
☐ Standard Addition Method	

☒ **Check For Positive Stop – Clearly Identify Homogenous Group** **Date Sampled:** 11-4-15

Samplers Name: Kyle Lawing **Samplers Signature:** [signature]

Sample #	HA #	Sample Location	Material Description
A1			Built-up Roofing
A2			↓
A3		* TEM	↓
B1			Roof Flashing
B2			↓
B3		* TEM	↓
C1			Silver Paint & Tar
C2			↓
C3		* TEM	Si ↓

Client Sample # (s): - **Total # of Samples:** 96

Relinquished (Client): [signature] to FedEx **Date:** 11-4-15 **Time:**

Received (Lab): [signature] **Date:** 11/5/15 **Time:** 9:20 AM F/x

Comments/Special Instructions: 7749 0295 2342

OrderID: 411508340

EMSL Analytical, Inc.
376 Crompton Street

Charlotte, NC 28273
PHONE: (704) 525-2205
FAX: (704) 525 2382

EMSL ANALYTICAL, INC.
LABORATORY • PRODUCTS • TRAINING

Asbestos Bulk Building Material Chain of Custody

EMSL Order Number *(Lab Use Only)*: 411508340

Additional Pages of the Chain of Custody are only necessary if needed for additional sample information

Sample #	HA #	Sample Location	Material Description
D1			Rolled Roof (Top)
D2			↓
D3		* TEM	↓
E1			Built-up Roof ; Lightweight
E2			concrete ↓
E3		* TEM	↓
F1			Edge Flashing
F2			↓
F3		* TEM	↓
~~G1~~		~~—~~	~~Flashing at Roof Drains~~ Omit
~~G2~~			↓
~~G3~~		~~* TEM~~	↓
H1			Roof Flashing
H2			↓
H3		* TEM	↓
I1			Roof Flashing
I2			↓
I3		* TEM	↓
J1			Exterior Caulk
J2			↓
J3		* TEM	↓
K1			Exterior Caulk
K2			↓
K3		* TEM	↓

30

*Comments/Special Instructions:

Page 2 of 5 pages

OrderID: 411508340

EMSL ANALYTICAL, INC.
LABORATORY • PRODUCTS • TRAINING

Asbestos Bulk Building Material Chain of Custody

EMSL Order Number *(Lab Use Only)*: 411508340

EMSL Analytical, Inc.
376 Crompton Street
Charlotte, NC 28273
PHONE: (704) 525-2205
FAX: (704) 525 2382

Additional Pages of the Chain of Custody are only necessary if needed for additional sample information

Sample #	HA #	Sample Location	Material Description
L1			Brown & Black Caulk
L2			↓
L3		* TEM	↓
M1			window glazing compound
M2			↓
M3		* TEM	↓
N1			Felt/mastic
N2			↓
N3		* TEM	↓
O1			9X9 Beige Floor Tile w/
O2			Brown mastic / Yellow carpet
O3		* TEM	mastic on "Top.
P1			Brown 9X9 FT w/
P2			Black mastic & Felt.
P3		* TEM	↓
Q1			Black mastic
Q2			↓
Q3		* TEM	↓
R1			Brown Sheet Vinyl
R2			↓
R3		* TEM	↓
S1			White Sheet Vinyl w/ White
S2			mastic and Brown FT & mastic
S3		* TEM	↓
S4			

*Comments/Special Instructions:

Page 3 of 5 pages

OrderID: 411508340

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Asbestos Bulk Building Material Chain of Custody

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PHONE: (704) 525-2205
FAX: (704) 525 2382

Additional Pages of the Chain of Custody are only necessary if needed for additional sample information

Sample #	HA #	Sample Location	Material Description
T1			Drywall & Joint
T2			Compound
T3			↓
T4			
T5			
T6			
U1			1X1 Random pattern
U2			Ceiling Tile
U3			↓
V1			2x2 Random pattern
V2			Ceiling Tile
V3			↓
W1			Roof Flashing
W2			↓
W3		* TEM	
X1			Roof Flashing
X2			↓
X3		* TEM	
Y1			mineral wool
Y2			↓
Y3			
Z1			Sink Coating
Z2			↓
Z3		* TEM	

78

*Comments/Special Instructions:

Page 4 of 5 pages

EMSL ANALYTICAL, INC.
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Asbestos Bulk Building Material Chain of Custody

EMSL Order Number (*Lab Use Only*): 411508340

Additional Pages of the Chain of Custody are only necessary if needed for additional sample information

Sample #	HA #	Sample Location	Material Description
AA1			Light Brown Sheet
AA2			Vinyl
AA3		*TEM	↓
AB 1			Yellow mastic
AB 2			↓
AB 3		*TEM	↓
AC 1			Tan & Brown cove base
AC 2			mastic
AC 3		*TEM	↓
AD 1			Terrazo
AD 2			↓
AD 3			↓
AE 1			Drywall
AE 2			↓
AE 3			↓
AF 1			Block wall coating
AF 2			↓
AF 3		*TEM	↓

96

*Comments/Special Instructions:

Page 5 of 5 pages

EMSL Analytical, Inc.
376 Crompton Street, Charlotte, NC 28273
Phone/Fax: (704) 525-2205 / (704) 525-2382
http://www.EMSL.com charlottelab@emsl.com

EMSL Order:	411508423
CustomerID:	GTER78
CustomerPO:	
ProjectID:	

Attn: **Jeffrey Gurrie**
Terracon Consultants, Inc.
3534 Rutherford Road
Taylors, SC 29687

Phone:	(864) 292-2901
Fax:	(864) 292-6361
Received:	11/09/15 9:30 AM
Collected:	11/6/2015

Project: **86157105**

Test Report: Lead in Paint Chips by Flame AAS (SW 846 3050B/7000B)*

Client Sample Description	*Lab ID*	*Collected*	*Analyzed*	*Lead* **Concentration**
PT1	*411508423-0001*	11/6/2015	11/9/2015	0.012 % wt
	Site: White Paint (Ext) Rear on CMU			
PT2	*411508423-0002*	11/6/2015	11/9/2015	0.043 % wt
	Site: White Paint on Structural Steel			
PT3	*411508423-0003*	11/6/2015	11/9/2015	0.057 % wt
	Site: White Paint (Int) on CMU			
PT4	*411508423-0004*	11/6/2015	11/9/2015	0.37 % wt
	Site: Black Paint (Int) on CMU			
PT5	*411508423-0005*	11/6/2015	11/9/2015	0.018 % wt
	Site: Tan Paint (Int) on CMU			
PT6	*411508423-0006*	11/6/2015	11/9/2015	0.17 % wt
	Site: White Paint (Int) on Wood Walls			
PT7	*411508423-0007*	11/6/2015	11/9/2015	0.012 % wt
	Site: White Paint (Ext) on CMU (Road Side)			
PT8	*411508423-0008*	11/6/2015	11/9/2015	<0.010 % wt
	Site: White Paint (Ext) on CMU (Retaining Wall)			

Kyle Collins, Technical Manager
or other approved signatory

*Analysis following Lead in Paint by EMSL SOP/Determination of Environmental Lead by FLAA. Reporting limit is 0.010 % wt based on the minimum sample weight per our SOP. Unless noted, results in this report are not blank corrected. This report relates only to the samples reported above and may not be reproduced, except in full, without written approval by EMSL. EMSL bears no responsibility for sample collection activities. Samples received in good condition unless otherwise noted. "<" (less than) result signifies that the analyte was not detected at or above the reporting limit. Measurement of uncertainty is available upon request. The QC data associated with the sample results included in this report meet the recovery and precision requirements established by the AIHA-LAP, unless specifically indicated otherwise.

Samples analyzed by EMSL Analytical, Inc. Charlotte, NC AIHA-LAP, LLC - ELLAP 192283

Initial report from 11/09/2015 15:21:37

APPENDIX D
INSPECTORS' LICENSES

SCDHEC ISSUED
Asbestos ID Card

Jeffrey A Gurrie

		Expires
CONSULTPD	ASB-22728	11/06/15
CONSULTBI	ASB-22352	11/04/15
CONSULTMP	MP-00197	11/04/15
AIRSAMPLER	ASB-22211	03/02/16

SCDHEC ISSUED

Asbestos ID Card

Kyle Lawing

Expires

CONSULTBI BI-01308 01/12/16

APPENDIX E
SITE PHOTOGRAPHS

Photo #1 View of Former Railroad Depot structure along East Cedar Rock Street.

Photo #2 General view of the northern exterior.

Photo #3 General view of roof looking east

Photo #4 General view of roof looking east.

Photo #5 Built-up roofing (“A”), western roof section.

Photo #6 Roof flashing (“B”), western roof section.

Photo #7 Silver paint and tar on metal roofing – contains asbestos.

Photo #8 Rolled roofing (“D”) over plywood and built-up roofing (“E”) of large warehouse roof.

Photo #9 Flashing (“I”) of Railroad Depot office building – contains asbestos

Photo #10 Exterior caulk (“J”)

Photo #11 Exterior caulk (“K”)

Photo #12 Brown/black caulk (“L”), on windows and doors of break room – contains asbestos

Photo #13 Window glazing compound ("M") – contains asbestos

Photo #14 Felt and mastic ("N") on eastern building exterior – contains asbestos

Photo #15 General view of office area

Photo #16 General view of office area

Photo #17 Tan 9-inch floor tile ("O") within office area – contains asbestos

Photo #18 Brown 9-inch floor tile ("P") within office area – contains asbestos

Photo #19 Black mastic ("Q") within office area – contains <1% asbestos

Photo #20 Brown sheet vinyl ("R") within office area – contains asbestos

Photo #21 White sheet vinyl over brown floor tile ("S"), floor tile contains asbestos

Photo #22 View behind wall paneling

Photo #23 Drywall and joint compound ("T") – joint compound contains asbestos

Photo #24 Roof flashing ("X")

Photo #25 Flashing ("W") on metal roof of compressed gas storage area – contains asbestos

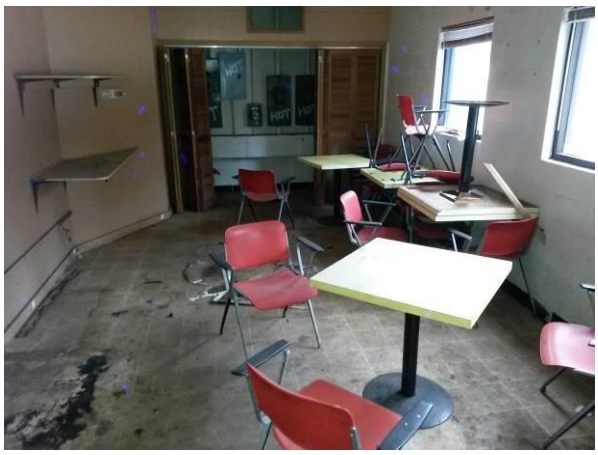

Photo #26 General view of back break room area

Photo #27 Sink coating ("Z") within break room area – contains asbestos

Photo #28 Light brown sheet vinyl ("AA") and yellow mastic ("AB") below plywood – yellow mastic contains <1% asbestos

Photo #29 General view of warehouse area

Photo #30 View of crawlspace below office area. Apparent TSI debris ("AG") assumed to contain asbestos